

# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

BROWN  
PASSES  
ONNet biz  
loses key  
advocate.

Page 14



STAN BAROUH

## INTEROP ROUNDUP

Digital  
snubs its  
own E-mail

By Barb Cole

Las Vegas

If General Motors bought its company cars from Audi, folks might be a little shocked. Well, Digital Equipment Corp. plans to do something equally surprising: rip out its own messaging and groupware products from its internal network and replace them with Microsoft Exchange.

Digital, a longtime maker of electronic mail systems, plans to move about 50,000 of its 61,000 employees to Exchange during the next year, company officials said last week at NetWorld+Interop 96. Meanwhile, groups within the company continue to promote and sell Digital-branded E-mail and groupware tools, a job made more difficult by the company's switch.

In fact, officials denied that the Exchange rollout has

See Digital, page 65

By Kevin Fogarty

Las Vegas

Microsoft has been talking about its Cairo operating system for so long, it seems like ancient history. And like history, many aspects of Cairo have been rewritten.

Microsoft has delayed Cairo repeatedly and changed its definition several times, which has not helped make Cairo any less murky. And last week at NetWorld+Interop 96, company officials put another new face on the long-awaited technology and simultaneously stretched the delivery schedule out even further.

Cairo was originally supposed to be a follow-on to Windows NT 3.5, and based on the original schedule, it should be in broad deployment today. But the full technology will not even enter beta testing until next year, Microsoft officials acknowledged.

The technology was also supposed to make its debut all at

## Web watches over LANs

Cabletron to give customers SmartView of switch modules.

By Jodi Cohen

Las Vegas

Cabletron Systems, Inc. last week gave NetWorld+Interop 96 attendees a sneak preview of a product that will let them config-



## MORE COVERAGE

## NETWORLD+INTEROP

Show highlights, pages 6-10.

- ▶ Intranets and the 'Net steal the show. Page 6.
- ▶ IBM/Tivoli lay out unified management road map. Page 8.
- ▶ Netscape reveals replication plans. Page 8.
- ▶ HP's Tornado management system touches down. Page 10.

once as a complete operating system for clients or servers. Instead, Microsoft has been dribbling out what it calls "parts of Cairo."

One such part, the company said, is the Exchange directory. However, the original plan was

See Cairo, page 64

ure and monitor LAN switches via World-Wide Web browsers.

The product, tentatively dubbed SmartView, is an HTML-based server card that will be embedded in Cabletron's Smart-Switch hardware. It will give network administrators a graphical display of their Multi Media Access Center-Plus (MMAC-Plus) SmartSwitch modules, enabling them to set IP addresses, among other things.

The Web-based tool will be a vast improvement over today's method of using telnet to learn the basic health of a switch mod-

See Cabletron, page 65

Are bigger  
Bells better?

By David Rohde

Washington, D.C.

It may have been the passage of the Telecommunications Act of 1996 that paved the way for SBC Communications, Inc. and Pacific Telesis Group to enter into their blockbuster merger agreement last week. But it is the continuing heavy hand of telecommunications regulation that will limit new opportunities for the integrated company and its customers.

Teaming up will create a telecommunications colossus, sec-

ond in size only to AT&T. But it will be some time before the union will pay dividends to customers in terms of expanded long-distance options and other emerging services because of the new law.

If anything, the merger announcement left some California users jittery over the prospect of SBC — a carrier considered largely indifferent to the specialized network needs of big corporations — taking over Pacific Bell, one of broadband

See PacTel, page 64

## THE SUPER BELL: SBC AND PACTEL UNITE



1995 revenue - \$12.7 billion

Local phone service territory - 5 Southwestern states

Edward Whitacre, Jr.  
Chairman & CEO  
SBC CommunicationsPhilip Quigley  
Chairman & CEO  
Pacific Telesis1995 revenue - \$9.0 billion PACIFIC TELESIS  
Local phone service territory - California and Nevada

Wireless markets - Cellular: includes Boston, Chicago, much of Texas; PCS licenses: Little Rock, Ark., Memphis, Tenn., Tulsa, Okla.

Tariffed fast packet data service - Frame relay

1995 revenue - \$9.0 billion PACIFIC TELESIS  
Local phone service territory - California and Nevada

Wireless markets - Cellular: none; PCS licenses: Los Angeles, San Francisco

Tariffed fast packet data services - Frame relay, SMDS and, shortly, ATM

SOURCES: COMPANY REPORTS, MTA-EMCI, SALOMON BROTHERS, TELECHOICE

## Cisco preps Fast E-net

By Jim Duffy

San Jose, Calif.

Cisco Systems, Inc. next week will take aim at Bay Networks, Inc. and the Fast Ethernet market when it unveils a new workgroup switching line and a module for its Catalyst 5000 switch.

The new 14-port Fast Ethernet switches, dubbed the Catalyst 2900 line, are designed for connecting workgroup LANs to high-speed backbones and centralized servers, according to Cisco officials at the NetWorld+

See Cisco, page 65

Get up to speed on Fast Ethernet. Additional resources include:

- An overview of the Cisco Catalyst 5000 series switching system

- A Fast Ethernet white paper from Farallon Computing

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# FRAME RELAY IS NOT A RACE

{//headline:

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## BUT IF IT WERE, WE SEEM TO HAVE TAKEN THE LEAD

>

{//currentfile/Run/(Utilizing both Frame Relay and ATM technologies, mainstream companies will recoup the major investments made in existing network infrastructure.)>Desh Deshpande)//sa

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## This Week



### News+

#### The Front Page:

- Telecom: Learn more about telecom reform and its impact on regional Bell operating companies. Browse the Web sites of major telco players.
- LAN switching: How Cabletron plans to use a Web-based tool to configure and monitor LAN switches.
- Fast Ethernet: You'll find links to help you keep pace with this high-speed LAN technology.

#### The Technical Sections:

- TCP/IP processing: Brush up on TCP/IP environments, AS/400 systems and servers competing with IDEA's new gateway, in WANs & Internetworking.
- Standard APIs: Download the latest on open database connectivity and other industry-standard APIs, in Client/Server Applications.
- Data backup: Locate links on backup software and storage management, including Cheyenne's Notes and Exchange software agents, in Local Networks.
- Browsers: Take a trip to Nashville, Microsoft's Internet add-on to its Explorer 3.0 Web browser. Get the lowdown on the superheated browser wars, in Intranets & the 'Net.



### Forum

- Debate the Communications Decency Act with a panel of experts. Read their comments, then weigh in with your own.

## this week's pick

Whether you're an expert on ATM or just getting started, you'll find valuable information in the Cell-Relay Retreat. This site hosts the archives to the cell-relay mailing list, several other ATM-related mailing lists and many other resources.  
<http://cell-relay.indiana.edu/cell-relay/>

### HOW TO GET ON TO NETWORK WORLD FUSION

At the welcome screen, click on First Visit and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Non-subscribers must fill out an on-line registration form.



## CONFERENCE PICK

### HOT TOPIC

**Read Melinda Le Baron and Skip MacAskill's column on the rise of Fast Ethernet, then add your opinion.**

Select Forum, Columnists then Net Results



## News

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SPECIAL FOCUS  
**VLAN**  
interoperability

Making VLANs work in multivendor environments is still no easy task, key vendors admit.  
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**NetworkWorld's Mission:** To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.

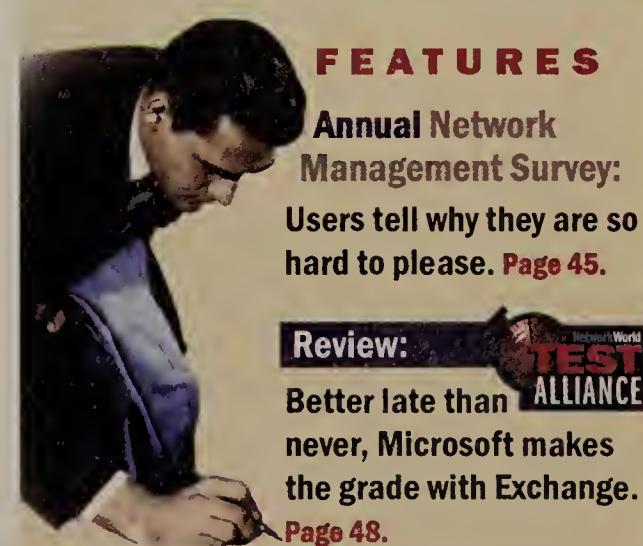
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### Review:



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Network Help Desk. Page 39.

Message queue. Letters to the editor. Page 41.

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## News briefs, April 8, 1996

### A Lucent view on Wall Street

■ Investors snapped up shares of AT&T equipment spin-off Lucent Technologies, Inc. as the company went public last Thursday. The offering of 20% of the company at \$27 per share raised \$3 billion for AT&T, making it the largest initial public offering in U.S. history. Shares closed at \$30.63 following the first day of trading on the New York Stock Exchange.

### Bay readies switch strategy

■ Bay Networks, Inc. will soon disclose a comprehensive strategy and product line to address desktop, wiring closet and network center switching opportunities. Expected are Fast Ethernet modules for the Centillion 100 Asynchronous Transfer Mode switch, as well as stackable versions of that switch. The company is also expected to announce Fast Ethernet switch products in the Distributed 5000 hub form factor by the end of this month. In addition, the company is getting ready to ship in June a modular version of its Remote Annex 6100 channelized T-1 remote access concentrator for the System 5000. An ISDN Primary Rate Interface modular device is expected next year.

### Arrivederci, Abensour

■ Daniel Abensour, a 30-year IBM veteran and one of the company's most visible Asynchronous Transfer Mode proponents, will be retiring from Big Blue at the end of the month. Abensour was in charge of IBM's ATM product plans, and — while those strategies have increasingly come under fire from the analyst and user communities — sources said Abensour is leaving for personal reasons. No replacement has been announced.



Abensour

## NetWorld+Interop briefs

### Disaster avoidance plan

■ MCI Communications Corp. last week introduced a disaster recovery scheme for its HyperStream frame relay service at NetWorld+Interop 96. The service includes a dial-up ISDN access option and a 50% discount on backup frame relay ports. Unlike competitors' offerings, the carrier also will maintain backup permanent virtual circuits (PVC) established at the same committed information rates as the primary PVCs.

### Exchange vs. GroupWise

■ While Microsoft Corp. Chief Executive Officer Bill Gates made sure that the company's new Exchange Server got plenty of attention at NetWorld+Interop 96, groupware/messaging rival Novell, Inc. refused to stand by idly. The company talked up GroupWise WorkFlow, technology developed with FileNet Corp. that allows GroupWise users to collaborate on assignments and monitor work in progress. Novell also announced a promotion targeted at NetWare customers running Microsoft Mail. Such customers will receive as many as 50 GroupWise 4.1 client licenses, a Message Server NetWare Loadable Module and the Microsoft Mail Migration Utility free for the next 60 days.

### Exchange vs. Notes

■ Lotus Development Corp. also refused to let Microsoft hog the groupware/messaging spotlight at the show. Lotus announced a series of tools for moving from Microsoft Mail, cc:Mail and IBM OfficeVision to Notes. The tools will help administrators migrate directories, messages with attachments and folders. The tools are free via Lotus' Web site at <http://www.lotus.com>.

### Cisco proves worthy of emulation

■ Cisco Systems, Inc. was showing an ATM LAN Emulation board for its Catalyst 3000 stackable Ethernet switch at last week's NetWorld+Interop 96 show. The board, which will connect the switch to a backbone device over an ATM link, is now in beta testing and will ship in the second quarter, a Cisco official said. However, software for it won't ship until the third quarter, the official added.

# The Internet is the buzz at Interop

By Tim Greene

*Las Vegas*

Novell, Inc.'s Robert Frankenberg was, of course, promoting his own company's thrust into the Internet, but his keynote address at NetWorld+Interop 96 last week reflected users' interest in Internet and intranet capabilities.

"Our future is the ability to integrate Internet technology," Frankenberg said about his own company, and that also rang true for users, large and small.

At one end of the scale, Dennis Cavanaugh was scouring the show floor for Internet security measures for an electronic commerce service Pacific Bell will launch later this year.

At the other end, Lloyd Smith, a teacher at Illinois Valley High School in Cave Junction, Ore., was looking for Web page development tools for a high school course he is planning. His vision: The kids he teaches will be able to get jobs if they can work with the Internet and the World-Wide Web.

In addition, vendors were hyping the Internet as a place to do everything from electronic mail to commerce. Microsoft Corp. even had a demonstration of IP voice over the Internet — a far cry from public telephone quality, but comprehensible nonetheless.

With end users becoming more familiar with Web software, network managers were looking for ways to incorporate the look and feel of the Web in corporate applications.

Babak Roushanaei, a senior technology specialist for enterprise network planning and security at NYNEX Corp., said he was intrigued by Open Connect Systems, Inc.'s software that

### CORRECTION

The price for Network Specialists, Inc.'s Double-Take was incorrect in last week's review (April 1, page 85). The correct price is \$1,875.

offers a Web interface to SNA applications.

The comfort users have with browser software also has him looking for a way to use a single browser interface to the multiple management platforms NYNEX employs within its carrier network.

Steve Troester, a network manager at the University of Iowa, was carrying around an Internet/intranet laundry list to meet his users' demands. He needs:

- An Internet service provider with access ports at speeds greater than T-1.
- A better way to integrate his cc:Mail system with Internet mail so university users are not forced to decode messages — a task that often results in help desk calls.
- A plan for on-line card catalogs and book borrowing for state libraries.
- A way to put physical-therapy databases on-line for the university's preventive medicine students.
- A firewall to protect the school's private networks from



Novell's Frankenberg says the future is in integrating Internet technology.

invasion by people using public services such as on-line course registration.

Things that would have preoccupied Troester in earlier years have taken a backseat. His networks run NetWare, but that was not a concern for him. It is a well-established, well-understood tool, and he needs to spend time now learning about what he will be installing next.

Looking to capitalize on the Internet, Pacific Bell's Cavanaugh was pa-trolling the show floor looking for security tools.

Though he had not yet found it, Cavanaugh wanted a multilayered security system that included user authentication and authorization at the network and application layers, as well as encryption — and all without making it so involved that a user would be reluctant to employ it.

The service he is designing would offer users private internets that would include services ranging from voice to video and access from analog to broadband. ■

### A B E N D

**abend** (n) 1: abnormal end to a computer process 2: the on-line fountain of 'Net wit and high-tech humor found on Network World Fusion ([www.nwfusion.com](http://www.nwfusion.com)).

### Space aliens and crazy cars

- There's more to 'Net news than server upgrades and database backups. Stories that defy belief; stories that force you to question reality; stories that even the *National Enquirer* rejected. And they all can be found on the Weekly Web News Site.
- In the latest edition, available on Network World Fusion, you'll read about space aliens abducting Web surfers, how an experiment to control automobiles from cyberspace has gone dangerously awry and a weight loss program that allows you to eat all you want!

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# IBM/Tivoli lay out a three-phase mgmt. plan

By Michael Cooney

Las Vegas

IBM and subsidiary Tivoli last week laid out plans to meld their separate products into a common product line designed to simplify the management of multivendor networks from the mainframe to the desktop.

As expected, the companies' TME 10 product line will rely most heavily on Tivoli Management Environment functionality, but it will also include a good portion of IBM's SystemView technology, according to Tivoli CEO Frank Moss (NW, March 25, page 14). IBM acquired Tivoli in March for \$743 million.

"With Tivoli running IBM's management show, I hope TME 10 doesn't become a case of the tail wagging the dog," said Atul Kapoor, principal of Kaptronix, Inc., a consultancy in Hawthorne, N.J. "Users have been promised the moon and stars before — it'll be interesting to see how Tivoli delivers."

IBM and Tivoli plan to deliver the goods in three phases:

■ First, by the end of this month, their existing product lines will be consolidated into one. More specifically, TME 10 takes all



**"The Holy Grail of systems management doesn't exist, but we are going to build new integrated products at lightning speed."**

Frank Moss

eight components of today's TME 3.0 family and merges them with about 30 of the more than 50 SystemView products. All of the products will be renamed to reflect the TME 10 family. For example, NetView will become NetView for TME.

■ Second, by year-end, separate applications will be integrated and offered as TME applications. For example, Tivoli's Courier and IBM's NetView Distribution Manager will be combined to form a single package for delivering software updates to everything from a mainframe to a Unix workstation.

Products such as IBM's Resource Object Data Manager, a mainframe-based object-oriented management database, will have TME interfaces added to them. This will let a customer using Tivoli's enterprise console or inventory application pull information such as topology or SNA resource location from the database.

"We'll eliminate the operating system-specific development scheme IBM had so that all future products will be developed and rolled out in a more multi-vendor, cross-platform manner," said Martin Neath, vice

president and general manager of Tivoli's core products.

■ Finally, in 1997, a common management console based on TME technology will emerge along with new applications. These applications could include tools for managing Lotus Development Corp.'s Notes and other messaging systems from a single console. For now, a handful of IBM management products that fall outside Tivoli's existing area of focus will continue to be supported by their respective IBM business unit, Neath said. For example, most of the Application System/400 network and systems management products will be maintained by IBM's AS/400 division.

"Those products can ultimately communicate with the TME 10 family, but they aren't part of the core product technology in the future," he said.

Migration tool kits will help users with existing IBM products adopt new TME 10 functionality, Neath said. For example, a tool will be available for moving to Tivoli/Admin — the user directory and resource locator for TME 10 environments — from IBM's SystemView for AIX directory tool.

"If there is a weak spot in this road map, it is the migration strategy, because it's not clear" how users should go about migrating at this point, noted Tim Wilson, a senior consultant with Decisys, Inc., a consultancy in Sterling, Va. "The flip side is that users should get a simpler way of ordering and installing integrated products."

Pricing for TME will likely be announced within 30 days, Neath said. ■

## TME 10: WHAT IBM PRODUCTS ARE IN AND OUT

Product	IN	Function
NetView/390		Net management
Information/Management		Trouble-ticketing
NetView for AIX		Distributed management
SystemView Server for OS/2		Remote network management
PC SystemView		LAN management
	OUT	
DB/2 Performance Monitor		Database tracker
SystemView for OS/400		Network management
LAN Management Utilities		LAN management
Trouble Ticket/6000		Trouble-ticketing

## Kentrox adds ISDN to arsenal

By Tim Greene

Las Vegas

ADC Kentrox last week set out to challenge Ascend Communications, Inc.'s dominance of the remote office access market, but not before adding one more weapon — ISDN — to the Kentrox arsenal.

Kentrox sealed a deal to buy San Mateo, Calif.-based Skyline Technology, Inc., maker of PaceSetter, a small office ISDN router equipped to support Internet or corporate LAN access over either an ISDN Basic Rate Interface or frame relay link.

The company will use the device to compete with two remote access routers from market leader Ascend — the Pipeline 50 and Pipeline 130. Ascend dominates the remote-site router market with 20% of the units sold in 1995, according to a preliminary market report from the Dell'Oro Group consultancy in Menlo Park, Calif.

The Kentrox PaceSetter, which was available for viewing at the Kentrox NetWorld+Interop 96 booth here last week, represents the company's first ISDN offering.

Within 18 months, Kentrox plans to add ISDN support to existing products and flesh out PaceSetter, according to Richard Gilbert, president of ADC Kentrox.

Kentrox plans, for example, to add an ISDN Primary Rate Interface to PaceSetter and target it at corporate sites and Internet service providers, directly challenging Ascend's MAX family of central-site switches. Ascend holds the largest share of

that market, too, according to Dell'Oro.

Despite Ascend's lead, Gilbert said challenging a well-established competitor can be an advantage in that Kentrox can design its line with Ascend's devices as a reference point and shoot to improve on them.

PaceSetter can offer connectivity over an analog phone line at 28.8K bit/sec, or support PPP, X.25 or frame relay traffic through a high-speed serial interface port.

The device supports frame relay at speeds up to 1.55M bit/sec.

In one configuration, the device could offer frame relay support for remote office users, with its ISDN capacity held in reserve as a dial-up backup to the frame relay link. That flexibility could

also allow users to easily switch remote access transport from frame relay to ISDN and back if carrier pricing or remote access use change enough to make it worthwhile from a cost perspective.

Using its routing capabilities, the device can offer multiple users on a remote-office IP LAN access to the Internet through a single Internet LAN account. Or, the device can connect any designated user on an IP LAN to the Internet, but allow only one user access at a time.

The device is already compatible with Kentrox data service units/channel service units, which will be integrated into the product as a part of a future offering.

PaceSetter is available now and costs \$1,195.

©Kentrox: (503) 643-1681.

## Netscape readies replication technology

By Adam Gaffin

Las Vegas

Netscape Communications Corp. is readying replication software aimed at helping firms better manage large networks of World-Wide Web servers.

By year-end, the company expects to ship software that will let a user distribute documents across a network of Web servers with a single mouse click, according to David Pann, a Netscape product manager attending NetWorld+Interop 96 here.

The software, based on technology already used by Netscape internally, will be part of a Netscape effort to develop content management tools, Pann said.

As companies deploy Web servers, they are beginning to distribute increasingly complex

and bulky documents and applications on local servers to help reduce bandwidth consumption across the WAN. Currently, however, such document distribution often means a painful process of manually making File Transfer Protocol connections to each server.

Pann said the software would be integrated with Netscape's existing public-key encryption and access control list software so a net manager could limit who can replicate to which servers. He added that the company is looking at ways to bring document management functions to its servers.

The company also is looking at extending its Catalog Server software, which can index the content on Web servers, to elec-

tronic mail and Usenet discussions, Pann said.

Separately, Netscape last week said a beta version of its Proxy Server 2.0 software is available for free from its Web site (<http://www.netscape.com>).

The new edition of the software will let companies cache documents that are frequently accessed from the Internet on a server inside the corporate firewall. The software can then be used to replicate the documents to intranet servers within the corporation, making the documents accessible to workgroups without the need to traverse the WAN.

Proxy Server 2.0 is available on various Unix platforms and will later be available on Windows NT. It costs \$995.

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# HP users say Tornado packs plenty of punch

By Jim Duffy  
Las Vegas

Hewlett-Packard Co. last week finally delivered the goods when it rolled out the long-awaited distributed version of its management software designed for networks with tens of thousands of nodes.

OpenView Network Node Manager (NNM) 4.1 — also known as Tornado — can manage corporate internets at least 10 times larger than previous versions of OpenView can manage, HP claimed.

That means OpenView users constrained by the product's current 2,000-to

5,000-node limit should be able to expand their networks without seeking an alternative management platform or supplier.

Users said NNM 4.1 fulfills everything HP promised from the Tornado project, including improving OpenView's perfor-

mance and scalability. But they are still eager for more.

"Synergy" and the common database still needs to get done," said Paul Edmunds, senior network analyst at Duke Power Co. in Charlotte, N.C., and president of the OpenView Forum user group. Synergy is the code name for another OpenView project that includes a common data repository, among other features.

Nonetheless, Edmunds said, NNM 4.1 is a big step.

Similarly, 3M Corp., Chrysler Corp. and Lockheed Martin Corp. cited areas, such as distributed data storage, where OpenView could still be enhanced for their specific environments. But they all agreed that HP has come a long way with NNM 4.1, especially in reliability.

The code is highly bulletproof at this point, said Frank Belland, senior systems architect at Lockheed Martin in Orlando, Fla.

Tornado has the ability to provide a highly available platform, according to Chris Amley, lead network management analyst at 3M in St. Paul, Minn.

NNM 4.1 allows management tasks and processes to be shared by multiple OpenView servers. Until now, those tasks — including node discovery, polling and event processing — ran on a single server.

Moreover, OpenView servers can share and synchronize management information so they can cooperatively manage multiple network domains or back one another up in case of failure.

These servers can also send full or filtered management information to a centralized NNM 4.1 console, enabling users to establish a hierarchical management environment for enterprise-wide control.

Another key feature of NNM 4.1 is On-demand Submaps, which provides operators with faster access to network submaps while reducing the amount of main memory required on the management console by 90%. The On-demand Submaps feature loads only those submaps into main memory to which an operator needs access. Previously, OpenView required operators to load all submaps for the entire enterprise network.

NNM 4.1 costs \$15,995 per server. A version for HP's Entry NNM software, designed for networks of 100 nodes or fewer, costs \$4,995. Both are shipping now.

NNM 4.1 supports HP-UX and Solaris operating systems, with Windows NT support due in the second half of 1996 for domain-level management only.

A centralized NNM 4.1 console on Windows NT will be available in 1997, said Gordon MacKinney, HP OpenView program manager. HP has no plans to extend the distributed capabilities to its OpenView for Windows Workgroup Node Manager platform, he added.

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Duke Power's  
Edmunds says NNM  
4.1 is a big step.

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# Exchange faces battle with Notes and the 'Net

By Barb Cole, Kevin Fogarty  
and Carol Sliwa

*Las Vegas*

When Microsoft first started building Exchange in 1990, the 'Net was nothing and Notes was barely a factor.

Microsoft Corp. finally launched Exchange last week into a world where Notes reigns over groupware and the Internet rises above all.

challenge.

In fact, when company officially rolled out Exchange last week at a NetWorld+Interop 96 keynote address, Microsoft Chairman Bill Gates lost no time pounding on the software's strength as an electronic mail backbone to corporate intranets.

And analysts said playing up the 'Net potential of Exchange is

and pull Exchange into that," said Bob Flanagan, an analyst at The Yankee Group in Boston.

If Microsoft can clearly draw the line between Exchange and the Internet, some of the product's imperfections will be masked, analysts said.

For example, Exchange lacks cross-platform server and client support. However, the very notion of a platform is rapidly changing as a result of the Internet, said Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn. "Today, many ISVs are now counting on browsers to serve as an alternative platform to a pure Windows implementation," Austin said.

## Notes killer

Then there is the lack of groupware features in Exchange, which was once billed as a Lotus Notes killer.

"Exchange is basically a souped up client/server-based messaging product that has hooks into the user desktop as opposed to a full-blown groupware product," said Gary Rowe, a principal at Rapport Communication. Today, Exchange does not have the features to kill Notes, Rowe said.

Given the rise of the 'Net and the prominence of groupware, it is going to take Microsoft a minimum of five years to catch

Lotus, Austin said.

These descriptions of Exchange do not unnerve Bob Jorgensen, communications manager for Boeing Information and Support Services, which recently signed a deal to install 65,000 Exchange seats. "We plan on using Exchange initially for mail and calendaring. Over time, we will roll out collaborative applications based on Exchange," Jorgensen said.

Being lumped into the groupware category, however, may not be advantageous to Microsoft at this point, analysts said. "A lot of what companies were trying to achieve with groupware internally is really moving out onto the Internet," according to Flanagan. Where Exchange might best fit in now is as a messaging server to the 'Net, he said.

But some believe Exchange has a way to work effectively with the Internet. "The debate is no longer Notes vs. Exchange; it's Notes vs. the Web, and Microsoft doesn't even play in that space yet," said David Marshak, an ana-

lyst at Patricia Seybold Group, Inc. in Boston.

## Gates loses the crowd

While focusing on corporate intranets helped steer attention away from Exchange's lack of groupware features, the audience that attended Gates' keynote was not impressed. The standing-room-only crowd that packed a ballroom to hear Gates speak began to melt away during the speech, apparently put off by the lack of new information.

Exchange was worth the time and effort, said Eric Iversen, director of application development systems at Nabisco, Inc., who joined Gates at the podium.

Nabisco currently has about 2,700 of a total 7,000 E-mail users moved from Microsoft Mail to Exchange, Iversen said.

"Exchange offers us, in addition to the base E-mail capability, the replication of folders which, for our 2,400 remote salespeople, is absolutely critical to building a distributed environment," Iversen said. ■

## THE TIMES THEY ARE EXCHANGIN'

**Mid-1990**  
Microsoft's next-generation messaging project begins.

**October 1993**  
The first test version of the messaging technology is released.

**June 1994**  
Test Release 2 makes it out of the blocks. The product, dubbed Exchange Server, is called a Notes killer by some.

**1990**

**1993**

**1994**

**1995**

**1996**

**March 1994**

Microsoft previews its mail client software, saying it will ship the "Touchdown" family of products in the second half of 1994. The product line had been known as the Enterprise Messaging Server, Spitfire and Capone.



**Feb. 1995**

Beta Release 1 issued.

**April 1996**

The product is officially launched by Microsoft CEO Bill Gates at NetWorld+Interop.



While Exchange now has to deal with both of these realities, the 'Net is perhaps the bigger

key. "The thing that Microsoft has to do is find a way to capitalize on the Internet phenomenon

## Network World catches up with Gates

Network World Editor in Chief John Gallant met up with Microsoft Corp. Chairman Bill Gates and popped a few networking questions.

Over the past few years, Microsoft has had the goal to become a major player in the enterprise network. Could you rate your progress?

Our enterprise network business is by far the fastest growing business. A key to this has been the rise of WinNT as a standard, a standard that lets people choose from many different suppliers.

What are the major challenges you face as an enterprise network player?

Well, I think the demand out there for being able to share information inside companies is very high, and people will see that they have got to have security. They've got to be connected to the Internet, and they've got to have traditional structure data. They want to see how to put that together in a system that has a reasonable low cost of ownership.

Now a key answer to that is integration — making sure they don't have to manage so many different systems.

What about integration with legacy systems? That's one area where Microsoft has been knocked.

We're doing a lot of exciting things there with the Exchange Mail product. We're connected up to all the traditional mail systems. We have gateways for Wang, DEC, IBM — you name it, we tie it very, very well.

In the area of database, we bought a company called Netwise that was in the business of doing data connections. We're providing now even replication capabilities on a heterogeneous basis between SQL server and other databases. We have an SNA server product that is the most popular SNA product on WinNT.

So actually connecting legacy systems is a huge part of the work we do. If you take Exchange, I'd

say almost half the work that went into it was making sure that it connected with X.400 and SMTP systems.

How would you compare your progress in the enterprise with the customer perception?

I'd say the customers we're working closely with understand the 24-hour, 7-days-a-week support we're providing, and they understand this model we've created of working with Solutions Providers. Some of the customers we're just starting with, they don't understand that we actually have more enterprise support for people than Oracle, or Novell, or virtually anyone else out there.

With WinNT, on the other hand, I think there's a wide appreciation of that coming standard. I think there are very few customers who don't see that it's the server system that they'll be developing for mostly in the years ahead. ■



JEFF SCHIEFELBEIN

## Seagate enters suite market with LAN management products

By Ben Heskett

*Las Vegas*

In order to play the LAN management software game these days, vendors must offer customers suites to complement point products.

And Seagate Enterprise Management Software-East is doing just that, having unveiled at Net-

problem using WinInstall. Analysts said Seagate's approach to the market — with products bought and then integrated — may put it at a disadvantage against LAN management veterans such as Symantec Corp. and Intel Corp. Those companies have had more time to smooth out any integration issues

### THE SEAGATE DESKTOP MANAGEMENT SUITE

#### Components include:

- **LAN Directory 2.0** – Asset management program.
- **WinInstall 5.1** – Software distribution tool.
- **Proxy 1.54** – Remote control product.
- A help desk tool based on technology from Cauchi Dennis.

World+ Interop 96 last week the Seagate Desktop Management Suite. The company's entry into the suite market includes a new software distribution product obtained via a \$13 million acquisition of OnDemand Software, Inc. and an updated asset management tool, among other components.

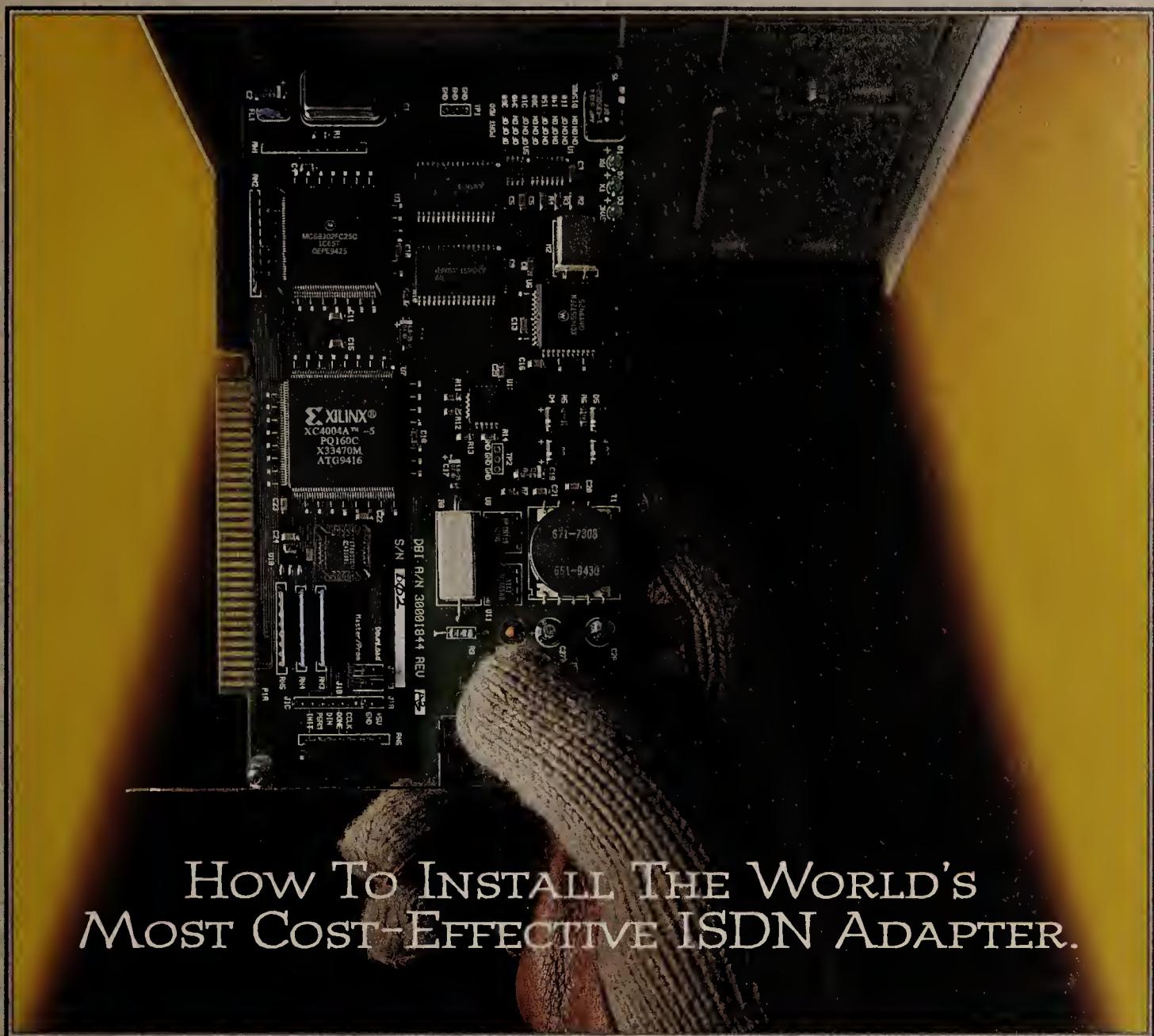
Using the suite, an administrator can access a workstation remotely, find out the hardware and software contents of the system using the WinLand inventory tool, and update applications causing the system

between the tools in their suites, analysts said.

Seagate also announced last week that its Seagate Server Management product — acquired last year in the Frye Computer Systems, Inc. purchase — will be upgraded by September to let companies manage their servers via Worldwide Web browsers.

The Seagate Desktop Management Suite will be available later this month at a cost of \$1,495 for 50 users and \$1,395 for each additional 100 users.

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## Appreciation

# Ron Brown: A champion of network technology

By David Rohde

Washington, D.C.

With the tragic death last week of Commerce Secretary Ron Brown in a plane crash, the network industry has lost one of its most visible supporters.

Vice President Al Gore is fre-

quently credited with giving technology issues the high status they enjoy here today. But it was Brown and his department that focused like a laser beam on what the Clinton administration dubbed the National Information Infrastructure (NII).



STAN BAROUR

Brown was most publicly active in the promotion of the NII during 1994, when government officials were trying to convince everyone that the information superhighway was something other than the Internet or 500 channels of cable television.

Back then, the superhighway hype was at its thickest, and government officials were in all

information superhighway — though hardly with universal broadband access — Brown turned to the

seriousness suggesting that we were at the dawn of an age where all individuals could have broadband access to a wealth of materials.

But when it became clear that the Internet was the closest thing we had to an infor-

nuits and bolts of actually bringing a worldwide information structure into being.

In a landmark meeting in Brussels, Belgium, in February 1995, Brown and Gore pressed telecommunications ministers and other officials from around the world to open their markets to competition. The U.S. experience, they said, taught them that competitive forces invariably unleash the energies needed not only to develop new technologies, but also to get them widely accepted.

Every few months or so, Brown would call technology writers, including this reporter, into his office, located across Pennsylvania Avenue from *Network World's* bureau here.

Brown had a way of tying the Department of Commerce's efforts together with the undeniable leadership role of the U.S. in developing and implementing network technology both at home and abroad.

Usually, discussions with Brown were timed with the release of a thick report on some aspect of the NII. His overriding goal was to throw light on the role of information technology in economic uplift for people across the country and around the globe. And Brown filled a unique role as the Democratic administration's No. 1 ambassador to business.

"Secretary Brown was tireless in his work to assist U.S. industry in developing access to world markets," said Matthew Flanagan, president of the Telecommunications Industry Association. "He had a strong interest in telecommunications and considered it an essential sector in economic development." ■

## Federal electronic commerce network in a tangle

*Performance and registration problems plague FACNET, a net intended to link government agencies and suppliers.*

By Ellen Messmer

New Orleans

It was to be the federal network the Clinton administration hoped would bind agencies with thousands of their suppliers, a "single face to government."

But in the two years since it began operating, the Federal Acquisition Computer Network (FACNET) has been a big disappointment. Intended as the exchange point for bids and purchase orders, FACNET is plagued by serious performance and supplier registration problems.

business electronically over two years.

Thousands have submitted registration forms. In February, FACNET administrators, struggling with database problems, halted FACNET registration. They then flushed all the registered suppliers out of the FACNET database because the administrators decided the suppliers had been incorrectly registered to begin with.

It is hoped that help is on the way. At last week's Data Interchange Standards Association (DISA) conference here, government officials said FACNET registration is starting up again using an 838 EDI message.

The lucky few that actually made it through the FACNET system the first time around found that RFQs are only trickling through FACNET, mostly from the Defense Department.

For participating network managers, it has been like boot

camp for EDI. "We've had 5,000 trouble tickets since we started over two years ago with FACNET," said Gordon Romanas, purchasing manager with medical supplier Alpha Pacific, Inc. Romanas has seen RFQs and the firm's bids simply vanish in FACNET, never to be seen again. Agency purchasing agents buying from him call up wondering where his electronic purchase order is.

Many other FACNET suppliers are in the same boat. Strangely, FACNET already appears to have congestion problems.

"There's a delay in the delivery of transmissions between FACNET and the end user," said FACNET supplier Bill Klomstad, major accounts specialist with computer vendor Gateway 2000. "The Ogden and Columbus network entry points are not always working."

Sometimes RFQs arrive after

the date the response is due, and bids reach agencies after deadline.

Finding someone to troubleshoot is difficult because the FACNET 800 number is always busy, and there is lots of finger-pointing between the VANs and FACNET hub managers.

Last week, DISA officials promised to add two T-3 lines to correct the congestion problem.

While FACNET was supposed to provide a single face to government through common X12 EDI standards, that face is constantly changing. The Navy, Army and Air Force are using either the older 2003 EDI version or the more recent 3010, 3040 and 3050.

Last week, DISA representative Lib Curtis said the military will now also be using the 3060 version.

He said suppliers should prepare to support this in their software within a few months. ■

## MCI reprices SMDS

*New HyperStream rates eliminate mileage-based charges.*

By David Rohde

Washington, D.C.

MCI Communications Corp. last week revamped the pricing for its HyperStream Switched Multimegabit Data Service. The new prices, which eliminate the mileage-based charges previously employed, are meant to entice users to the new Toll-Free Addressing and Value-Added Addressing options the company announced at last week's NetWorld+Interop 96 show.

Under Toll-Free Addressing, the central site — typically a company establishing a switched data network with its distributors or suppliers — pays for all usage charges in both directions. ■

Under Value-Added Addressing, the other party pays for all usage charges in both directions (NW, April 1, page 6).

The new rate chart simplifies the calculation for either option by establishing a fixed price of 4.1 cents per megabyte of data at speeds up to T-1 and 3 cents per megabyte of data at higher speeds. To add to the incentive, MCI allows unlimited free usage once users hit certain maximum usage charges.

However, even under Toll-Free Addressing, all parties are responsible for buying a port of the appropriate speed on a HyperStream switch (see graphic). ■

### Nitty-gritty details

Speed (bit/sec)	Monthly port charge per address		Max. monthly usage charge per address	
	With RBOC SMDS access	With private- line access	With RBOC SMDS access	With private- line access
64K	\$50	\$180	\$293	\$164
128K	NA	\$336	NA	\$327
256K	NA	\$394	NA	\$654
384K	NA	\$578	NA	\$980
512K	NA	\$735	NA	\$1,307
768K	NA	\$946	NA	\$1,547
1.024M	NA	\$1,178	NA	\$1,620
1.536M	\$250	\$1,470	\$3,037	\$1,740
4M	\$750	\$3,000	\$3,940	\$3,500
10M	\$1,500	\$5,500	\$5,833	\$6,600
16M	\$2,000	NA	\$8,813	NA
25M	\$2,500	NA	\$12,960	NA
34M	\$3,250	NA	\$16,524	NA

NA = Not available at that speed with that access method.

SOURCE: MCI, RICHARDSON, TEXAS

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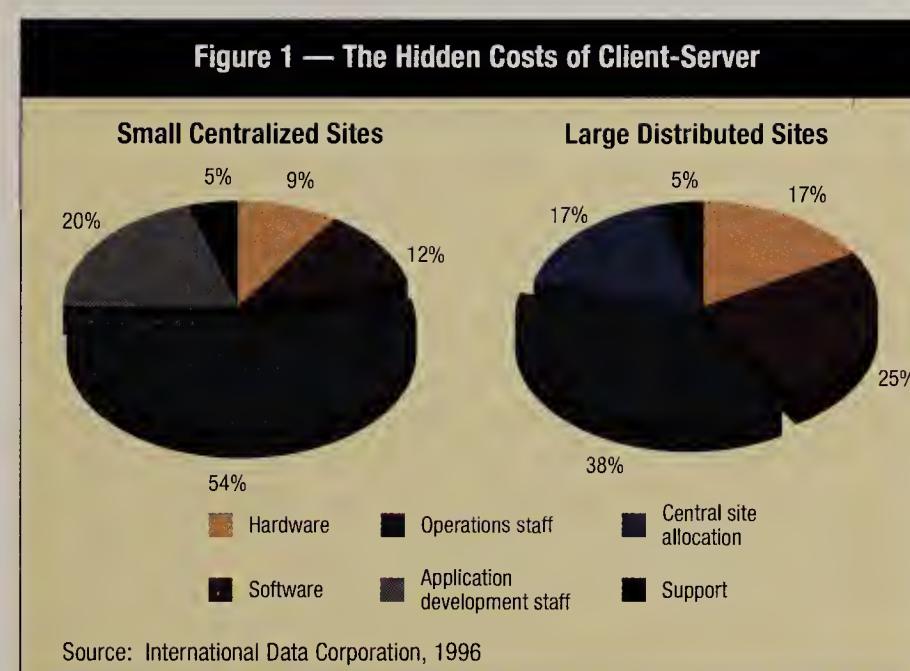
AN INDUSTRY UPDATE WRITTEN BY INTERNATIONAL DATA CORPORATION AND SPONSORED BY NOVELL, INC.

## Meeting the Challenge of Client-Server Computing

# Maximizing Return-on-Investment of Network Computing

The migration to client-server computing is affecting organizations both large and small almost everywhere on the planet. Computer users today have extensive access to global network-based resources, including communication gateways to other companies, individuals, and markets worldwide. Signs of this connectedness abound:

- Last year the number of LAN users worldwide hit nearly 100 million, double the number in 1993. By 1999 the number will double again.
- In the same year the number of people in the world with electronic mail boxes topped 40 million. By 1999 the number will be over 125 million.
- Groupware users numbered over 30 million worldwide by the end of 1995; by 1999 they will number over 250 million.



So we are heading for a wired workplace, a wired marketplace, even a wired society. However, there is a price to be paid for all this connectivity. The nearly universal implementation of client-server systems requires living with new levels of complexity and new hardware and software that people must be trained to use. Moreover, highly skilled personnel must be hired to install, manage, maintain, and administer these far-flung networks. The result is that staffing costs have become the largest contributor to total networked computing costs, regardless of the size of the installation (see Figure 1).

Until now, companies have justified the costs and complexities of client-server computing by competitive advantage—it is a very flexible and adaptable computing style. But when client-server is the norm, where will the competitive advantage lie?

IDC believes that companies that learn to manage their networked resources through technology and training will win out over their peers in the long run. Companies that understand the true costs and true benefits of client-server computing

will generate quicker return for their investments. Companies that relentlessly optimize, integrate, and upgrade existing systems will stretch IT resources further and be able to reinvest sooner than competitors taking a wait-and-see approach.

### Areas of Opportunity

IDC and Novell have teamed to produce this White Paper in order to help IT managers develop a strategy for maximizing return on investment in networked computing resources. It is the executive overview of three studies researched and written by IDC and sponsored by Novell. In the research it conducted,

### Driving Down Networking Costs

#### GroupWise:

Typical annual return-per-user of 334%

Nearly \$400,000 a year saved in phone costs at Farmland Foods

Courier costs cut \$16,000 a year at Sheppard, Mullin, Richter & Hampton

#### NetWare 4:

On average 15% less expensive than NT Server from Microsoft

50% increase in users supported by a single server

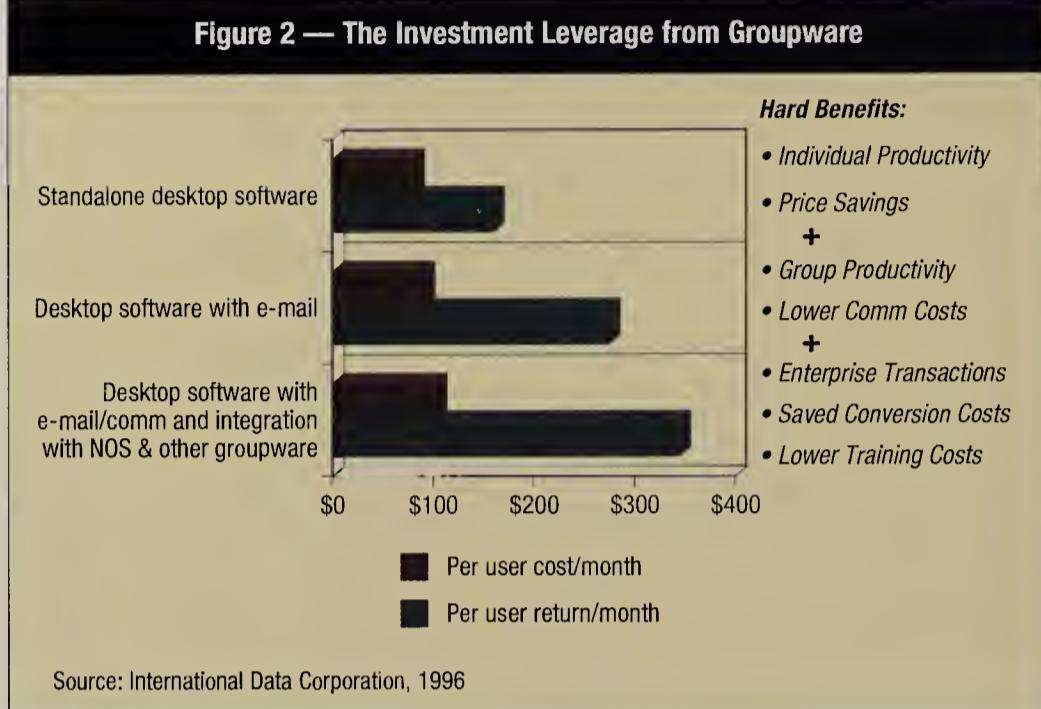
#### ManageWise:

\$95,784 savings in business efficiency per 100 users

50% reduction in network downtime

19.7 day payback

**Figure 2 — The Investment Leverage from Groupware**



IDC found three areas of networked computing that are focal points for ROI leverage:

1. The choice and use of communication applications such as e-mail and groupware
2. The choice and use of next-generation network operating systems
3. The use of advanced network and system management tools

In addition, IDC found that when products in support of all three of these areas work together in an integrated fashion—such as Novell's GroupWise, NetWare 4.1, and ManageWise products—benefits are compounded. Support and training costs are lower, conversions and upgrades occur faster, applications come on stream sooner, and downtime is reduced.

#### Applications for the Next Wave

The migration to client-server computing is a quest to provide users with access to information and computer resources beyond their desks. One of the key tools for this is groupware software, epitomized by Novell's GroupWise, software which integrates e-mail with scheduling, calendaring, and other workgroup oriented functions. The market for groupware is exploding as organizations find they can use it—specifically the e-mail function—as a platform for providing workgroup and even enterprise-wide access to information and resources.

In the research IDC conducted, almost half of the business benefits organizations received from migrating to groupware came from better internal and external communications. For instance, Farmland Foods, a \$2 billion dollar meat processing company, found that since installing GroupWise, documents once faxed in 15 minutes now take less than five to e-mail. Further, the use of GroupWise saved almost \$400,000 in voice phone calls a year.

- Hard Benefits:**
- Individual Productivity
  - Price Savings +
  - Group Productivity
  - Lower Comm Costs +
  - Enterprise Transactions
  - Saved Conversion Costs
  - Lower Training Costs

Figure 2 illustrates how electronic communication and collaboration generate cascading benefits. Standalone desktop software can impact individual productivity, but when combined with e-mail, that software can improve the productivity of a whole workgroup, not just the individual user. If the e-mail is specifically designed to work with the desktop software and with the network software, as say Novell's GroupWise is with NetWare 4.1, then those workgroup benefits are compounded.

This efficiency pays real dividends. When Sheppard, Mullin, Richter & Hampton, a Los Angeles law firm, made the move to GroupWise it found the support ratio for lawyers dropped from one assistant for every two lawyers to one for every three. GroupWise scheduling cut count-

less hours in tasks as routine as setting up meetings; GroupWise e-mail cut courier costs by \$16,000 a year.

For most companies, an investment in groupware is considered an incremental cost. The hardware is already in place, as is the network. Moreover, the support costs—which account for more than 50% of the cost of operating a networked PC—are shared across dozens of applications.

But even with all the hardware, network, and support costs amortized across the groupware software, it's a bargain. IDC's research with Novell's GroupWise customers found that a typical installation required only about \$250 in fully-loaded first-year costs—less than 5% of the annual cost of operating and supporting an end-user personal computer.

For that \$250 investment, those same GroupWise customers found that their first-year return was over \$800 on lowered communication and clerical costs alone. Meanwhile, they accrued an array of other concrete benefits, such as fewer meetings (and thus less travel and meeting administration), easier document handling, and so on. For every single GroupWise customer interviewed by IDC, return-on-investment exceeded expectations.

#### Modernizing the Network

If the LAN is the heart of client-server computing, then the network operating system is its soul. As LANs have evolved from peripheral information systems to the primary components of mission-critical systems, they have become more robust and more scalable. Along the way they have also provided IS personnel with the tools to manage network resources as never before.

In fact, powerful new management capabilities are why many people are migrating to NetWare 4.1. With more than 375,000

licenses installed worldwide as of 1995, it is the most popular network operating system. Three key reasons for its popularity are:

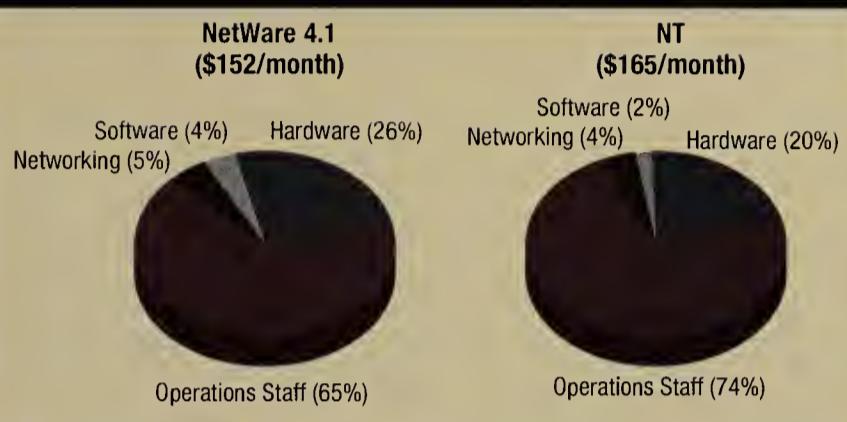
- Greater functionality
- Improved management
- Directory services

Figure 3 illustrates how survey respondents believe migrating to NetWare 4.1 has enhanced network productivity—with ease of administration at the top of the list, mentioned by nearly 40% of respondents. NetWare 4.1's greater functionality has promoted companies' reliance on LANs and delivered on the ultimate promise of client-server—increased productivity.

According to recent surveys conducted by IDC, LAN managers report remarkable improvements in managing their networks under NetWare 4.1. Although they expected the number of nodes on their networks to grow by 260% in the 12 months following installation, they anticipated the number of file servers on the network would grow by only 163%. In other words, under NetWare 4.1, they expect to increase the ratio of users per server from 41 to 60—an improvement of 50%.

In addition to increasing the number of users per server, NetWare 4.1 provides a single point of administration with Novell Directory Services (NDS) that results in a lower cost of network administration. Figure 4 shows how, in medium-sized

**Figure 4 — Network Cost-to-Use at Medium (300 User) Sites  
(Costs After Migrating from NetWare 3.X)**



Source: International Data Corporation, 1996

sites, NetWare 4.1 generates 14% lower network administration costs than Microsoft NT, primarily by increasing the user to support staff ratio.

Novell and other networking companies have set their sights on developing new technologies that will make tomorrow's networks more efficient and flexible. Novell has developed a Smart Global Network strategy, which entails making the network available to anyone—anytime, anywhere. An essential component of the Smart Global Network is Novell Directory Services (NDS), which enables companies to keep track of and connect all of a network's users, workgroups, hardware and software on one common access and administrative framework. NDS provides directory services technology that can handle the management of countless resources on heterogeneous systems spread around the globe. Also fundamental to Novell's vision of the future is an open set of application programming interfaces (APIs) that will make it easy to incorporate NDS and other NetWare 4 networking services into distributed applications.

#### Providing End-to-End Network Management

Staffing costs and end-user productivity are the issues that keep IS managers awake at night. And that has never been more true than it is today. As networks expand and intertwine, the critical success factors for network managers will include:

- Increasing network uptime, both in operation and when installing new users or applications
- Increasing efficiency by supporting rapid network growth without commensurate growth in staff
- Increasing responsiveness, fixing problems in a way that minimizes idle time for users or within business processes

To meet these needs, Novell offers ManageWise. It combines both network management and PC administration into a single, integrated package. Previously, most PC administration and LAN management products worked independently of one another, each requiring dedicated staff and resources.

**Figure 3 — How NetWare 4.1 Improves Network Productivity**



Source: International Data Corporation, 1996

ManageWise is the integrated solution that offers a single view of the network. It provides analysis tools for understanding bottlenecks; permits the configuration, inventory, and diagnostics of PCs from a single local or remote site; and provides tools for monitoring and managing remote and local servers. IDC's research demonstrates that even small and medium-sized companies can achieve significant cost savings by implementing ManageWise (see Figure 5). Network managers found that the most significant gains in efficiency were realized in server operation and help desk functions. Using ManageWise also increased LAN manager responsiveness. Before implementation, only 30% of network or end-user problems could be solved from a central site; afterwards, that number rose to 60%. This is especially important for companies with highly decentralized operations.

Since the software-licensing, maintenance, and training costs of a product like ManageWise are low compared to the number of users potentially affected, the return on investment can be surprisingly high. Across the survey base polled by IDC, ManageWise paid for itself on average within 19.7 days.

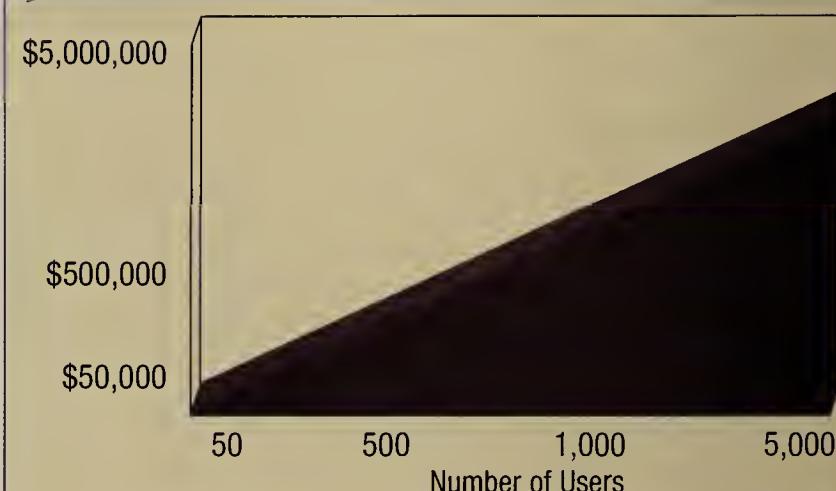
For every 100 users, implementing integrated management with ManageWise saved \$95,784 annually. These savings are attributable to the following:

- More efficient systems management, including an increase of 33% in the number of servers and 25% in the number of PCs a staff person can support, and a decrease in travel of 53%, leading to annual cost savings of \$14,500
- Significant reductions in the time required to perform key management tasks—such as five hours in moves and changes, nine hours in server maintenance and configuration, seven hours in help desk and support, four hours in problem tracking, three hours in printer maintenance, etc.—saving \$30,844 annually
- Dramatic reductions in network downtime (over 50%) due to network outages, delays addressing problems at the desktop, or time spent installing and configuring applications, generating annual savings of \$50,440

#### Cost-Savings and Client-Server: They Aren't Mutually Exclusive

Believe it or not, return on investment in networking can be quantified. While it may sometimes seem that networks are growing out of control, vendors like Novell are in fact working diligently to develop products for simplified, easily managed

**Figure 5 — Average Annual Savings From ManageWise**



Source: International Data Corporation, 1996

local, wide-area, and global networks. Because of the strategic and financial advantages of networking wherever systems reside and users roam, organizations will be forced to expand the reach and complexity of their networks simply to remain competitive.

Astute companies will concentrate on migrating to client-server computing in ways that maximize both the resources available to run networks and the effectiveness of those who ultimately generate revenues and profits—namely, end users.

#### Call to Action

This is an executive overview of a three-part series of White Papers entitled:

- Novell GroupWise: Leveraging Desktop and Network Investments
- Novell NetWare 4.1: Reducing Cost of Ownership
- Novell ManageWise: Maximizing Returns on Networking Investments

For a free copy of the Novell Business Advisor containing tools that help you assess return on investment with NetWare, ManageWise, and GroupWise, as well as electronic versions of the IDC White Papers, call 1-800-665-4586 or visit either the Novell home page at <http://www.roi.novell.com> or the IDC home page at <http://www.idcresearch.com>



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# WANS & Internetworking

Covering: Network Architectures and Management • Routers • Muxes, Remote Access Gear, Modems, PBXs and other CPE • Mobile Computing Products

## Briefs

**U.S. Robotics and Microsoft Corp.** last week showed off a version of the Total Control Enterprise Network hub, which includes Microsoft's Windows NT Server operating system. By running NT, the remote access server from U.S. Robotics can also host other applications such as intranet servers, databases and messaging products, including Microsoft's Exchange.

With this approach, users can get applications right at the network point of access rather than trilling into other corporate servers, U.S. Robotics said. U.S. Robotics: (708) 982-5001.

**Remedy Corp.** last week rolled out a new release of its Flashboards visual metrics application that features enhanced customization.

Flashboards 1.1 allows users to define their own alarms and views of which system performance metrics to measure. The application notifies users of pending trouble tickets even when it is not actively running, and can print out an entire screen of dials, graphs and charts for easier reporting.

Flashboards 1.1 costs \$5,500 and will ship later this quarter. Remedy: (415) 254-4919.

**TyLink Corp.** recently introduced a T-1/fractional T-1 data service unit/channel service unit called TY3250 that includes direct Ethernet LAN port. That feature allows the device to be managed through network routers via the Simple Network Management Protocol. Alternatively, it can be attached to the LAN hub. TY3250 costs \$2,295 and is available now. TyLink: (508) 285-0033.

**FastComm Communications Corp.** recently announced its LAN Sargent synchronous Transfer Node access device has been certified to work with General DataComm, Inc.'s Apex ATM backbone switch. LAN Sargent is an Ethernet bridge and converts serial protocols to ATM cells. General DataComm already resells FastComm frame relay access devices.

## IDEA off-loads TCP/IP processing

New server to improve performance and save money for users deploying AS/400s.

By Michael Cooney  
Bedford, Mass.

IDEA last week announced a new gateway that will improve performance and save money for users that deploy AS/400s at the heart of their TCP/IP environments.

The IDEA TCP/5250 Server is a stand-alone PC software/hardware package that off-

loads CPU-intensive TCP/IP processing from IBM Application System/400 or System 3/X mid-range platforms. The tool reportedly improves end-user response times by up to 40% and decreases the need for additional memory and software on the mid-range system.

The TCP/5250 Server lets

users concentrate the AS/400 CPU on its primary mission — applications processing, said Rohit Mehra, IDEA product manager. With AS/400s increasingly being deployed to handle TCP/IP, off-loading the communications processing function will become an issue in larger AS/400 environments, he said.

Mehra cited International Data Corp. studies that show TCP/IP will be on 37% of the more than 450,000 AS/400s in the world by 1998. IDEA believes at least 58,000 of those will be TCP/IP only.

The TCP/5250 Server is a stand-alone gateway that resides between the AS/400 and downstream token-ring LAN-attached devices. As tn5250 traffic destined for the AS/400 traverses the LAN, the gateway picks it up and handles the TCP/IP translation for the AS/400.

The gateway also may be linked to a frame relay network and handle all incoming TCP/IP traffic.

IDEA's Mehra says the TCP/5250 Server lets users concentrate the AS/400 CPU on applications processing.

The offering supports any industry-standard 5250 emulators, as well as asynchronous and telnet applications traffic.

The gateway contains a Simple Network Management Protocol agent and can be managed by any industry-standard management platform, such as IBM's SystemView for AIX or Hewlett-Packard Co.'s OpenView.

IDEA said it is offering a less expensive and less complicated TCP/IP connectivity solution than products such as Microsoft Corp.'s SNA Server, which can also link TCP/IP users with AS/400 resources and handle off-load functions. Mehra argued that other connectivity options require proprietary client software or an upgrade to the AS/400's operating system to make them work effectively.

The TCP/5250 Server will be available this month for prices starting at \$4,995 for a 64-user version.

IDEA: (800) 257-5027.

## Hughes promises way to save on WAN costs



By Tim Greene  
Las Vegas

Hughes Network Systems, Inc. last week introduced what it calls streaming, a technology the company claims offers a way to save on wide-area links while improving the performance of edge routers in switched backbone networks.

With the help of Hughes software, routers no longer need to keep virtual channels alive in a switched network for routine

stored on the management workstation.

When an edge router receives a packet whose destination is unknown by the router, it taps the database for that information and sends the packet along. That information will reside in the edge router for a period preset by the net manager.

Subsequent packets for the same destination are forwarded by the router itself without the database dip, freeing up router memory.

StreamFinder software residing in the edge router also exchanges congestion information with the switch and can dynamically increase the buffer in the router based on that congestion notification.

The software for Hughes' access, internetworking and backbone products is under trial, with availability scheduled for late in the third quarter. Upgrades for current users of Hughes' hardware is free.

Hughes: (301) 428-5500.

### JUST STREAMING ALONG

Hughes' streaming architecture supports multiple protocols.

- |           |               |
|-----------|---------------|
| LAN       | WAN           |
| ▶ IP      | ▶ X.25        |
| ▶ IPX     | ▶ Frame relay |
| ▶ SNA     | ▶ ISDN        |
| ▶ NETBIOS | ▶ ATM         |

routing table updates. That reduces overall network bandwidth needs and lessens the cost of wide-area links, according to Hughes.

And because routing information is centralized in a streaming architecture, updating routing information as the network topology changes is easier. A single table in the management workstation is updated, rather than updating the routing table in each individual router.

With streaming, edge routers that interface with a public or private network's switched backbone are no longer loaded permanently with routing tables. Instead, they dip as needed into the streaming director — a database of routing information

## FastComm talks up voice over frame relay products

By Tim Greene  
Las Vegas

Betting that riding voice traffic for free over frame relay networks will boom, FastComm Communications Corp. last week unveiled a line of frame relay access products designed specifically to handle voice.

The company's initial Voice-FRAD offering will feature two voice/fax ports, two serial data ports and a serial trunk port. The product is scheduled to ship this month.

The user would have to provide a separate data service unit/channel service unit (DSU/CSU) to connect with a 56Kbit/sec frame relay line.

Later versions will include internal 56K bit/sec DSUs/CSUs and Ethernet ports, and a larger capacity device will have T-1 ports for connecting private branch exchanges.

All models will have at least two voice/fax ports and support voice compression of up to 13-to-1. Management will be by Simple Network Management Protocol or telnet.

The attraction to users is that they can send their voice traffic for free among sites on the corporate frame relay network, allowing net managers to cut intersite phone bills.

FastComm initially demonstrated voice over frame relay in 1991, but shipping products have instead focused on data frame relay access devices, X.25 and frame relay concentrators, modems, DSUs/CSUs and other remote access devices.

In the meantime, other vendors, Miconi Communications Corp., ACT Networks, Inc. and Nuera Communications, Inc. among them, have focused on voice over frame relay.

FastComm: (703) 318-7750.

Check into Network World Fusion for more information  
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► Competing TCP/IP servers  
Select News + then  
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<http://www.nwfusion.com>

# Microsoft

WHERE DO YOU WANT TO GO TODAY?®



# After years of making messaging richer for users, someone has finally made it more reliable for you.



## Microsoft Exchange Server – the only reliable, scalable messaging server with built-in groupware – is now shipping.

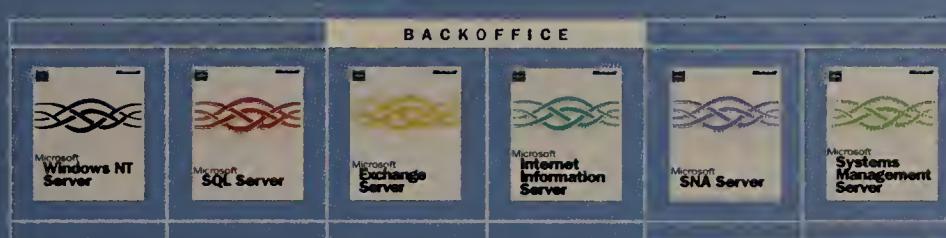
Rich text. Embedded graphics. Unlimited enclosures. It seems users have had every indulgence software makers can think of. Isn't it time someone thought of your needs? We have. And we think you'll be relieved to learn that, finally, there's a truly reliable messaging server now shipping. One with all the performance, security, and tracking features an administrator could want.

Microsoft\* Exchange delivers more messages faster and more reliably than any other mail or groupware system. It's also more secure. With built-in features like encryption and digital signatures, unauthorized access is all but impossible. There are also built-in tracking tools that let you locate messages anywhere in the system. And in the event your system ever loses connection, Microsoft Exchange will automatically identify the source, notify you, and even fix it. Most importantly, all of this is possible over any network – your intranet or the Internet.

Collaborative business solutions can also be deployed with confidence. With Microsoft Exchange's powerful messaging infrastructure, you'll have the required reliability for group scheduling, bulletin boards, and customer tracking applications. Administration and integration are equally uncomplicated. The entire system can be managed from a single desktop. And, unlike other systems,

Microsoft Exchange's multi-protocol open architecture provides native SMTP- and X.400-support, so it can peacefully coexist with almost any e-mail system. It even has built-in migration tools for Microsoft Mail, cc:Mail™, PROFS®, DEC All-In-1™, and Verimation Memo. So now you have every reason to make the move. And every assurance that it'll be worth it. To learn more, call (800) 426-9400, Dept. A234. Or visit our Web site at <http://www.microsoft.com/exchange>.

Messaging Requirements	Microsoft Exchange Server v4.0	Novell® Groupwise 4.1	Lotus® Notes r4.0
Scalable to widest range of hardware*	YES	NO	NO
Integrated Centralized Management Tools	YES	NO	NO
Integrated Internet Access (SMTP/MIME)	YES	NO	NO
Integrated X.400 (1984&1988)	YES	NO	NO
Built-In Group Scheduling	YES	YES	NO
Built-In Groupware	YES	NO	YES



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built on Windows NT  
Server, designed to work  
together and apart, and  
with what you have.

# NEC unveils wireless PBX extension

Operates in new unlicensed personal communications services band.

By David Rohde

Dallas

NEC America, Inc. last week became the third major manufacturer of private branch exchange systems to introduce a type of wireless PBX extension optimized

for campus environments.

The company unveiled the NEAX 2400 Wireless Communication System. The product operates in the new unlicensed personal communications services (PCS) band authorized by the Federal Commu-

nations Commission.

By harnessing the digital capabilities of PCS, the system offers pocket handsets with features identical to those available on desktop telephones sitting behind NEC's flagship NEAX 2400 ICS PBX for large enterprises.

For example, users can access voice mail, or initiate a transfer or conference connection with the same keypad entries as on a desktop phone.

"The idea is to make the user as productive with the wireless handset as they would be if they were sitting at their desk," said David Yedwab, vice president of Eastern Management Group, a consulting firm in Parsippany, N.J.

Use of the unlicensed PCS band at around 1.9 GHz also allows users to avoid cellular airtime charges and potentially eliminates the risk of interference found in traditional Part 15 devices, Yedwab said.

Similar PCS products have already been introduced by PBX market leaders Northern Telecom, Inc. and AT&T spin-off Lucent Technologies, Inc. (NW, Jan. 29, page 26).

While NEC is No. 4 in U.S. PBX market share, No. 3 manufacturer Siemens Rolm Communications, Inc. is working on a similar introduction, according to a Siemens Rolm spokesman.

"In-building wireless, while not yet widely installed, is becoming table stakes [for PBX makers and users]," Yedwab said.

For small and midsize users, NEC also unveiled a PCS extension for its NEAX 2000 IVS PBX. But the extension to the larger PBX will be shipped first, starting later this month. The product set includes not only the digital pocket handsets, but also the required zone transceivers used in PCS technology to transmit signals around a building or campus.

©NEC: (800) 832-6632.

*"The idea is to make the user as productive with the wireless handset as they would be if they were sitting at their desk."*

## THIS CHANGES NOTHING!

Actually, OC://WebConnect changes everything and nothing at the same time. It changes everything when it comes to accessing existing legacy applications. But, it changes nothing in your current infrastructure, applications or data structures. It lets users access mainframe and midrange systems from any Java-capable Web browser. It's a simple, economical and flexible way to put the right information in the hands of those who need it, when they need it.

### True Bidirectional Host Access

In the OC://WebConnect software product, OpenConnect Systems has elegantly blended the simplicity of Web browsers, the flexibility of Sun Microsystems' Java and the power of its own internetworking engines. This allows users on any platform real-time access to legacy systems via 3270, 5250, NVT and VT220-type terminal emulation. OC://WebConnect gives users secure and true bidirectional connectivity to host systems from the desktop, with point-and-click simplicity.

### Better Performance - Lower Costs

OC://WebConnect lowers the cost of ownership by removing the need for individual desktop emulation software, and eliminating many technical support, software distribution and configuration management issues. Thousands of users can be supported concurrently and you license only the number of concurrent users on the OC://WebConnect server, not all seats in your enterprise.

### Make the Change Now

OC://WebConnect, the Web 3270 Java Server is available now to help you change the way you move and manage legacy information in your organization. To get a FREE evaluation copy, use your Web browser to reach URL: <http://www.oc.com/WebConnect>. Simply complete the registration form and download the software that's changing everything - and nothing.

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## BusinessBriefs

**Cisco Systems, Inc. and Oicom A/S** of Denmark have entered into a long-term arrangement to jointly develop token-ring technology for router and switching products. Under the agreement, Cisco will provide the routing and switching technology for a future generation of token-ring products based on Oicom's media access control, Application Specific Integrated Circuit and token-ring software technology. The products will be marketed separately by both companies.

**Cisco Systems, Inc.** also recently promoted five officials in a realignment of its executive management team. Selby Wellman has been appointed senior vice president and will coordinate product and marketing strategies among Cisco's five business units. Cliff Metzler replaces Wellman as vice president and general manager of Cisco's Internetworks business unit. Meanwhile, Kevin Kennedy has been named vice president of the regional/branch office division of the company's Access business unit, while Tom Daly will become vice president of engineering in the Workgroup business unit. Lastly, Christine Hemrick has been named vice president of marketing for the Internet business unit.



## *The Synchrony™ Collection. A world-class portfolio of networking solutions for the next Millennium.*

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*Masters of Networking:* **ascom Timeplex**

# Vendors kick around VLAN interoperability

VLANs face new hurdles as users try to link systems from multiple vendors, NW roundtable participants said.

By Jim Duffy

Washington, D.C.

Despite apparent progress in defining virtual LAN standards, leading switching vendors are still at odds on how best to implement multivendor VLANs.

These differences make it difficult to realize the true potential of VLANs: the ability to release users from the shackles of a single LAN and keep that local feel as they communicate across the enterprise.

Through a combination of routing and switching, VLANs are also intended to ease configuration and administration of workgroups. They allow users to establish logical workgroups in which physically dispersed clients and servers can be isolated in their own broadcast domain.

Endstations can then be added or subtracted from that domain through software, rather than through physical rewiring or recabling. VLANs also enable users to define logical groupings based on switch port assignment, media access control addresses, network layer addresses or application.

At a recent roundtable sponsored by McConnell Consulting, Inc. and *Network World*, vendors diverged on the role of routers in a VLAN environment.

They also debated whether frame tagging, a technique blessed three weeks ago by the IEEE, is really the optimal method for fostering VLAN interoperability and if end users should belong to more than one VLAN workgroup.

The differences indicate that even though groups such as the IEEE are making progress on defining VLAN standards (*NW*, March 25, page 6), much work remains to be done.

"The integration that's supposed to happen with everyone supporting the same standards is magical thinking," said John McConnell, president of McConnell Consulting in Boulder, Colo. "It takes more than

that to really get interoperability."

Participants in the roundtable included representatives from Bay Networks, Inc., Cabletron Systems, Inc., Cisco Systems, Inc., Digital Equipment Corp., 3Com Corp. and Xylan Corp.

## Role for routing?

A key area where opinions diverged was on whether there is a role for routing in a VLAN environment and, if so, what that role should be.

Due to latency from packet examination and overhead from routing table maintenance, routers are thought to be sources of performance bottlenecks in switched VLAN environments. Yet some vendors insist that routers are necessary to interconnect VLANs, filter unwanted traffic and provide WAN access.

## Bay to the rescue?

Bay believes it has solved the performance issue. The vendor recently announced an ATM Virtual Network Routing Module for its System 5000 switching hub (*NW*, March 25, page 1) that routes 120,000 packet/sec. This is throughput that is "near the theoretical maximum," according to Steve Collins, director of product marketing for Bay.

"If I'm going in and out of that interface at ATM speeds and I'm getting full routing, that doesn't seem like routing is such a bad thing," Collins said.

Cabletron begged to differ. "It's probably a major bottleneck," said Michael Harrison, director of advanced technologies at Cabletron. "That's [120,000 packet/sec] less than one Fast Ethernet link."

The vendors also debated the merits of distributed and centralized routing within a VLAN environment. Some vendors, such as Digital, favor a distributed approach, where routing intelligence is embedded in high-

speed, frame forwarding devices. The benefit of this, according to Digital, is a reduction in latency by limiting router hops.

Others, such as Cisco, lean toward a centralized approach, where a large router calculates paths throughout the network and unintelligent, inexpensive switches cache some of this information for frame forwarding instructions. One of the benefits of this is that it keeps the price of edge switching devices down.

"The question is, where do you take the router hop?" said Bill Hawe, Digital's technical director for network products. "Do you take it in a central [device] prone to be a bottleneck and a single point of failure, or do you take it in a distributed [device] as soon as possible and then keep switching the rest of [the traffic]?"

## Point is moot

Some vendors believe the centralized/distributed issue doesn't matter as long as there is enough horsepower to perform the function.

"We're shipping a big box of 17 RISC [processors] and 40 ASICs, and you can start to disperse functions around the network with something like that," said Douglas Hill, vice president of marketing for Xylan. "But we aren't setting a direction for our users of centralized vs. distributed routing but rather working with them because I think there's a user preference issue, too."

The centralized vs. distributed routing debate is one not likely to be resolved through standards bodies. But VLAN interoperability is, and the IEEE has apparently made some progress there by defining a format for tagging LAN frames with VLAN identification information.

That VLAN frame tagging format is intended to enable interoperability by allowing multi-vendor switches to forward frames to the appropriate VLAN, no matter which vendor's switch they originated from. But the VLAN tag adds an extra 4 bytes to a LAN frame, which raises yet another interoperability issue.

Tagging frames can violate

the maximum allowable frame size for Ethernet, Fast Ethernet and FDDI media, meaning switches have to either recognize "illegal" frames or segment and reassemble them. How switches deal with illegal frame sizes is not part of the IEEE frame tagging



BILL ERDMAN  
Cisco



STEVE COLLINS  
Bay



BILL HAWE  
Digital

**While roundtable participants** disagreed on details like frame tagging, the role of routers and just how many groups an end user should belong to, they all said they believe in the virtues of virtual LANs. It is hoped that with dialogue, differences can be worked out.

standard. Thus, vendors will likely implement their own proprietary methods for handling illegal frames, which can hinder interoperability.

"The seamy side of tagging is if you take an Ethernet packet and put a header on it, now it's too big; it's actually an illegal packet," Digital's Hawe said. "So what do you do? Do you break it up, fragment it and then have to reassemble it? No one wants to talk about fragmentation with tagging. Everybody avoids it. It's a dirty little topic."

Nevertheless, Digital and most of the other vendors on the roundtable will support the IEEE VLAN frame tagging specification. Tagging, though, is but the first step to VLAN interoperability.

"There's more than just tagging to get to a standards-based implementation," said Bill Erdman, senior product manager for network management at Cisco. "How do you put a user into a VLAN group? There are conversations going on on that front."

There is also talk of whether users should belong to multiple VLAN groups. According to McConnell, one of the attractions of VLANs is the ability to create "logical communities of

interest" by grouping people by their function or project teams. But many people work on more than one project at a time or are members of more than one team. Given that, membership in multiple VLANs segments has to be possible. However, with today's VLAN schemes, it is not.

But some vendors question whether users need to be assigned to more than one VLAN workgroup. "Do [users] truly have things going on at

their desktop where they're actually in two VLANs at once?" Bay's Collins asked. "Today, I'm not so sure."

Collins argued that users implement VLANs mainly to increase performance but also to ease moves, adds and changes. Configuring switches to support multiple VLAN memberships would introduce a level of complexity that could sacrifice performance and ease-of-use gains he said.

Not necessarily, according to Cabletron. That all depends on the vendor's proprietary VLAN architecture, not on any standard that is defined or under consideration. "You can actually make a switch simpler by abstracting that level of processing off to a processing engine — your VLAN engine — and that's what we've done in our model," said Cabletron's Harrison.

But the performance of the model or any vendor's model has not been tested, so caveat emptor, Xylan's Hill said.

"We have to be careful in terms of extrapolating potential levels of performance from functionality that's offered," Hill added. "One thing that we all know right now is that we don't know how everybody's VLAN are really performing." ■



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## Briefs

**AT&T Tridom**, a provider of very small aperture terminal network services, announced it will support the StarBurst Multi-cast File Transfer Protocol (MFTP). Developed by StarBurst Communications Corp. of Concord, Mass., the MFTP software enables broadcast data delivery to networked users with a choice of data transfer speeds to conserve bandwidth. Anticipated applications include enterprise-wide delivery of software updates and so-called trickle charging of new information into replicated World-Wide Web sites.

**Pacific Bell** has chosen Newbridge Networks, Inc.'s 36170 MainStreet switch to support its FasTrak Asynchronous Transfer Mode cell relay service, which will be available midyear. Bandwidth will be sold in 1M bit/sec increments up to 155M bit/sec OC-3. The service will also include frame relay-to-ATM service interworking.

**Commissioner Andrew Barrett** last week left the **Federal Communications Commission** to head the technology, telecommunications and media practice at Edelman Public Relations Worldwide. His departure leaves Rachelle Chong as the only **Republican** among the four remaining members of the FCC. Political insiders consider Barrett's position unlikely to be filled until after the presidential election.

**MFS Communications Company, Inc.** announced a 2-for-1 stock split. The company's share price has soared from about \$30 a share last June to near \$65 last week as the company continues to double in size annually and figures heavily in telecom takeover speculation. The competitive local exchange carrier, however, has yet to turn a profit.

**Electric Lightwave, Inc.** recently reached an interim interconnection agreement with **US WEST Communications, Inc.** to provide local exchange service in and around Salt Lake City starting this summer.

## Beam your ATM traffic over to foreign LANs

By Tim Greene  
Bethesda, Md.

Connecting foreign networks using Asynchronous Transfer Mode sounds like a good idea. Unfortunately, not every country has an ATM infrastructure.

To solve this dilemma, COMSAT Corp. has just introduced ATM communication over satellite. The COMSAT system will let users simply jump over weak wired infrastructures and could be a substitute for international

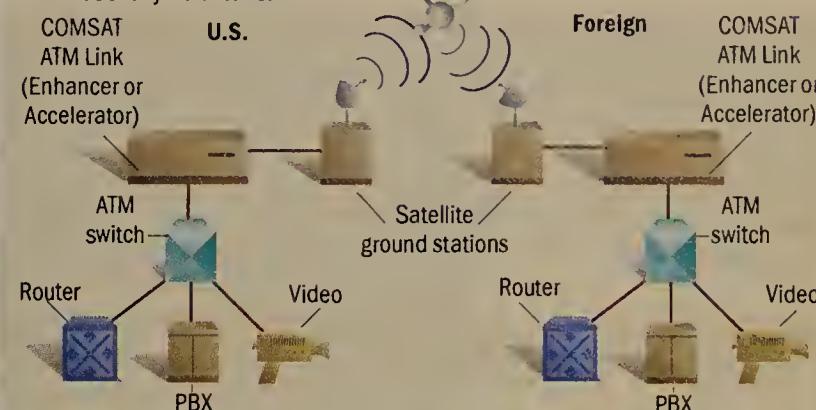
trunking, according to Susan Miller, director of advanced business applications at COMSAT World Systems Division.

A user with an existing very small aperture terminal network could upgrade by adding a COMSAT traffic conditioning device between the landline cell switch and the VSAT.

This device compresses ATM data traffic and establishes priority scheduling. That means voice, video and other time-sen-

### Broadcast ATM

COMSAT Link Accelerators or Enhancers groom ATM traffic so it can be broadcast internationally via satellite.



sitive cell traffic is given priority over other traffic types to ensure the quality of service they need.

The service can be provi-

sioned at two levels: 8M bit/sec or below and at 34M or 45M bit/sec. The box for the lower bandwidth service is called ATM Link Accelerator, and the one for the higher bandwidth service is called ATM Link Enhancer.

The service could also be offered by carriers. A user with ATM connections to a public ATM network would sign up for the service and the carrier would establish the necessary connection to a COMSAT uplink.

The service, for private or public networks, would be for international traffic only.

All traffic the user sends to the conditioning devices must be in ATM cell format already. The devices cannot convert other traffic protocols into cells.

The technology is in alpha tests, and beta testers, including AT&T and MCI Communications Corp., are being lined up for this summer.

Ameritech Corp. and NYNEX Corp. are both COMSAT VSAT customers, according to Miller. Regional Bell operating companies, freed by the Telecommunications Act of 1996, can now offer international service if they meet certain criteria, and most are working on getting that authorization.

Most are also negotiating with COMSAT to offer satellite service, she said.

The monthly fee to lease the devices will be about \$300 for the lower bandwidth system and \$350 for the one with higher bandwidth.

The price for satellite bandwidth is the same as for any other type of traffic. With a five-year commitment for T-1 bandwidth, the cost is \$23,040 per month for a half channel; the cost is cut in half with a 15-year commitment. ■

## Carriers downplay reports of CDMA glitches

By Joanie Wexler

Wireless carriers are downplaying reports that Code Division Multiple Access (CDMA) technology is experiencing technical difficulties.

While carriers pooh-pooh the reports, some analysts have gone so far as to say the long-in-development digital cellular technology is dying and will leave personal communications services (PCS) licensees Sprint Spectrum, PCS PrimeCo L.P.

### Who's backing what standard?

If CDMA doesn't perform, there will be 14 disappointed parties.

#### CDMA

- AirTouch
- ALLTELL
- Ameritech
- Bell Atlantic Cellular
- Communications\*
- Centennial Cellular
- Comcast
- GTE
- NYNEX
- PCS PrimeCo L.P.
- Sprint Spectrum United States
- Cellular\*
- US WEST

NOTE: Includes carriers using CDMA for PCS and as a digital overlay to analog.

#### TDMA

- AT&T Wireless
- Bell SouthCellular Communications\*
- Southwestern Bell Mobile Systems
- United States Cellular\*
- GSM (PCS-1900)
- American Personal Communications
- American Portable Telecommunications
- BellSouth Wireless
- Omnipoint
- Pacific Bell Mobile
- Powertel PCS
- Western Wireless

\*Backing multiple standards

CDMA is a spread-spectrum technology that divides transmissions into groups of bits, each with a code. The bits are then sent randomly across the spectrum and reassembled properly at the other end.

This efficient use of bandwidth gives CDMA the highest capacity potential of the various technologies fighting to serve as the foundation of forthcoming PCS. But the scheme also renders CDMA the most complex to implement.

#### Digital overlay

In addition to serving PCS networks, CDMA is being used as a digital overlay to analog networks to increase capacity. For instance, users of Bell Atlantic NYNEX

Mobile's CDMA overlay service — available in Trenton, N.J., and Bucks County, Pa. — get dual-mode phones that allow access to the carrier's analog cellular and CDMA nets. The phones scan for CDMA coverage and default to analog if there is none. Caller identification, message-waiting lights and short text messaging services are options.

Most carriers, though, are still tinkering.

"We're not completely comfortable [with CDMA] yet," said Craig Farrill, chief technical officer at AirTouch, whose CDMA deployment is behind schedule. "Voice quality is not consistent, and calls are dropped more frequently than we would like."

He said the company will continue to test the service in Los Angeles and will not bring it to other areas until it is satisfied.

US WEST Cellular acknowledged that CDMA had caused some interference with its analog channels but said it has since solved the problem.

Ameritech Cellular's vice president of engineering, Evan Richards, said at CTIA his company plans to have its overlay services out by early 1997. The company had originally tried Time Division Multiple Access but its customers were not satisfied with voice quality.

The company also has PCS licenses in Indianapolis and Cleveland, where CDMA services are slated to launch in 12 to 18 months. ■

# Is the phone company the new one-stop shop?

**G**one are the days when the phone company only knew about tie lines, hoot-and-hollers and Centrex.

But 10 years ago, if someone predicted that your phone company would take care of all your networking

needs — wide area, local area, premises equipment, and total maintenance and management, you would probably have laughed out loud.

Well, it's no laughing matter now. Some long-distance and local phone com-

panies have shown very compelling evidence that they are committed to helping customers off-load the burden of managing and operating the network.

One of the key benefits of subscribing to an integration service is you have more

time to concentrate on your core business rather than spending time determining why Mr. Jones in New York can't seem to send a file to Ms. Smith in Dallas. This kind of troubleshooting can be a painful and time-consuming experience, especially when there are multiple service providers and vendors all blaming each other. We are all at least somewhat familiar with the art of fingerpointing. Remember when mom used to ask, 'whodunnit?' Everyone would point to someone else.

While this behavior is not surprising among children, it is more than a bit frustrating among network suppliers.

Carrier integration services, however, offer an alternative by taking responsibility for all elements of the wide-area network.

The major long-distance companies and most RBOCs all have some form of network integration service in place. In its most basic form, the service provider has a partnership or alliance arrangement with an equipment vendor to provide a one-stop shopping solution for these two basic network components.

In these cases, you'll still have to deal with two salespeople, sign two contracts, receive two bills and manage two vendors, but the service provider will usually act as the single point of contact for handling problems and managing resolution.

Several service providers take this a step further by actually packaging the equipment and service together so you get a single salesperson, contract and bill.

Some of the RBOCs now offer true network integration services through deregulated subsidiaries that specialize in data network implementation and management. Examples of these are Ameritech Advanced Data Services, Bell Atlantic Network Integration and Pacific Bell Network Integration.

In addition to providing, installing, maintaining and managing your equipment and WAN, they can reach farther into your local environment and provide integration or management assistance if needed.

These integration subsidiaries are staffed with rare breeds of engineers and technicians who have experience in wide-area networks, local-area networks, premises equipment, protocols and data applications.

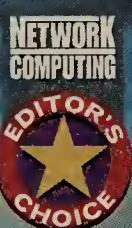
That way, the carriers can be the ones you point to for answers the next time your boss says, 'whodunnit?'

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at danny\_briere@telechoice.com or christine\_heckart@telechoice.com.



Daniel Briere and

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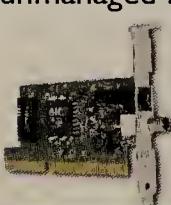
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# Local Networks

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## Briefs

**Standard Microsystems Corp. (SMC)** last week announced at NetWorld+Interop 96 its entry into the **Asynchronous Transfer Mode** market with its 155M bit/sec ATM Power 155 adapter.

The adapters support PCI, Sbus and EISA bus workstations. The cards are based on Application Specific Integrated Circuit hardware that regulates the spacing of cells during transmission, resulting in improved performance.

The cards will begin shipping in May and are priced from \$995 to \$2,080, depending on the media supported and bus type. The company is also working on a 25M bit/sec ATM adapter for PCI bus workstations.

SMC: (800) 762-4968.

**Hub vendor Optical Data Systems, Inc. (ODS)** last week showed off its **Massively Parallel Asynchronous Transfer Mode Matrix backplane** at NetWorld+Interop 96. The 41G bit/sec switching fabric is designed to eliminate network bottlenecks that some ODS customers have encountered with the firm's Infinity switching hub.

Users can upgrade their Infinity backplane in the field for \$3,300. ODS also rolled out a myriad of Ethernet, 25M bit/sec ATM, token-ring and FDDI switching modules for use in the high-end hub. Pricing for the modules starts at \$7,200, and they will be available this summer.

ODS: (214) 234-6400.

**Hub maker D-Link Systems, Inc.** in Irvine, Calif., last week announced its **ProFast II 10M/100M bit/sec work-group switch**. The device supports either eight switched Ethernet or Fast Ethernet ports and can operate as a store-and-forward or cut-through switch, depending on traffic loads. The ProFast II switch can be managed by a set of basic LEDs, as well as by any Simple Network Management Protocol-based management platform.

The switch is priced at \$1,995 and is available now.

D-Link: (714) 455-1688.

## Cheyenne to back up Notes and Exchange

By Ben Heskett  
Las Vegas



Cheyenne Software, Inc. last week unveiled new software agents that will let companies centrally manage data backups on servers running Lotus Development Corp.'s Notes and Microsoft Corp.'s Exchange Server.

The application-specific agents are designed to work with a common server-based ARC-Serve storage management engine from Cheyenne and a management console program. They were introduced here at NetWorld+ Interop 96 as part of Cheyenne's Application Agent Strategy, a shift from the company's previous strategy of offering a complete backup package for each specific application.

The agents will enable companies to schedule backups, receive alerts and keep logs, among other things, without taking applications off-line.

The agents work in such a way that net administrators need not know anything about the underlying file system or platform on

which the applications are running, according to Glenn Reyer, Cheyenne's director of corporate marketing.

Cheyenne is already shipping agents for databases from Oracle Corp., Sybase, Inc. and other vendors, as well as for SAP AG R/3 applications.

In the works is an agent for backing up and restoring Worldwide Web pages.

Agents for Notes on Windows NT and NetWare are priced at \$1,995 each. Agents for Notes on OS/2, Microsoft Exchange Server on NT and DataTools/SyBase for Unix cost \$995 each. These products will be available later this month.

©Cheyenne: (800) 243-9462.

## MODE ONLINE

There's more on storage management and backup software on Network World Fusion (<http://www.nwfusion.com>). Select News+ then Local Networks.



## Compaq intros Netelligent switches, NICs

By Jodi Cohen  
Las Vegas



PC and server giant Compaq Computer Corp. last week used NetWorld+ Interop 96 to launch its first family of hubs, switches and network interface cards (NIC).

The company's Netelligent product line includes a new Fast Ethernet switch and adapter cards, as well as Thomas-Conrad Corp. and NetWorth, Inc. gear acquired by Compaq last year (NW, Oct. 23, 1995, page 6).

The Netelligent 5506 Fast Ethernet switch supports five 100Base-T ports with one 100M bit/sec copper or fiber connection. The unmanaged switch, which can operate at either half- or full-duplex data rates, can be used to link workgroups or provide high-speed connections to workstations or server farms.

The workgroup switch supports as many as 6,000 media access control (MAC) addresses per port and operates at wire speed. Compaq plans to roll out

a managed version of the switch later this year.

Compaq also unveiled a trio of NICs designed for PCI-based clients and servers. Netelligent

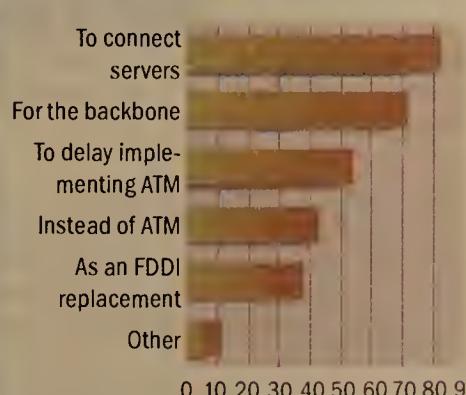
10 PCI and 10/100 PCI cards — for Ethernet and Ethernet/Fast Ethernet links, respectively — can be managed via any Simple Network Management Protocol-based platform. Also, Compaq announced the Netelligent token-ring PCI adapter, designed for high-performance server connections.

In addition to rolling out individual components, the company plans to bundle net gear with its servers later this year, said Doug Pushard, vice president of the internetwork-

See Compaq, page 28

### WHAT WILL YOU USE 100BASE-T FOR?

Percentage of respondents:

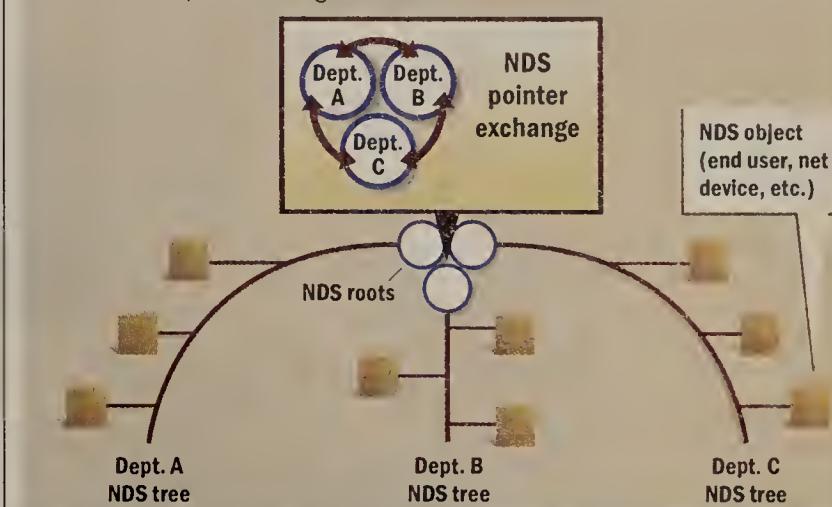


Based on a survey of LAN purchase decision-makers at 130 organizations (more than one response allowed).

SOURCE: INFONETICS RESEARCH, INC., SAN JOSE, CALIF.

## NOVELL'S DIRECTORY EXCHANGE PLAN

Novell's new version of NetWare Directory Services (NDS), dubbed Arches, will let companies link separate NDS trees at the root, exchanging NDS pointers with one another. But top-level NDS rights on an internal tree can be withheld from outsiders.



## Novell makes NetWare directories easier to share

By Kevin Fogarty  
Orem, Utah

Novell, Inc. is working on a new version of its NetWare Directory Services (NDS) designed to make linking NetWare networks easier, more secure and more flexible.

The new version, code-named Arches, is slated for delivery soon after the Green River

edition of NetWare ships in the fall.

While there are some performance enhancements, the primary new feature is the ability to build a rootless NDS tree structure. The root is the highest point in the NDS tree; users with rights to the root or directories with links to the root have access to all the information and objects on the tree.

Arches, which will ship as a service pack update to NDS, will support federated partitions — a mechanism by which users can connect parts of two separate NDS trees without linking the entire directory. A federated partition makes one section of the tree look like the entire tree.

"Think of it as creating a pseudo-root," said Michael Simpson, product line manager for Novell's NetWare Products Division. Arches will also include support for a nonglobal schema, meaning NDS will be able to link directories with very different definitions of the NDS structure and the objects in it.

Together, the two enhancements will give companies the ability to link their NetWare directories without altering the structure of their own NDS trees, or risking giving top-level supervisor privileges to someone outside their organizations.

That capability means that users will no longer have to cre-

See Novell, page 28

## Novell

Continued from page 27

ate a single NDS structure that applies to all the divisions in their company. It also means they can create more modular distributed networks with more local administration, rather than creating a single hierarchical structure for the enterprise.

The ability to link one NDS root to another was designed primarily for AT&T's NetWare Connect Service (ANCS), the public network Novell is building with AT&T and 13 other carriers nationwide, sources said.

"If you're [Nippon Telegraph and Telephone Corp.], you don't want to be part of a network where AT&T owns the root," said one source briefed by Novell. "And if you're Citibank, same thing; you don't want to connect to ANCS and give AT&T root access to your net."

Arches is one of a series of enhancements Novell is adding to make NDS more flexible and easy to use for interdepartmental and interorganizational networking. ■

## Compaq

Continued from page 27

ing products group at Compaq.

The 100Base-T switch is priced at \$5,567 and will be available in June. The 10/100M bit/sec NIC is priced at \$159 and is available now. Pricing for the 10M bit/sec adapter starts at \$119, and the token-ring card is priced at \$441; both will be available in May.

## Switching to UB

Separately, UB Networks, Inc. last week added to its Ethernet arsenal with an Ethernet desktop switch. The GeoRim/Edit supports 16 10M bit/sec Ethernet ports as well as an optional 100Base-T uplink for a Fast Ethernet backbone connection.

Michael Howard, president of Infonetics Research, Inc., a consultancy in San Jose, Calif., said many customers will like the option of having a switched Fast Ethernet link since the majority of users are planning to employ 100Base-T Ethernet for LAN backbones and server links.

The store-and-forward switch operates at wire speed, boasting a forwarding rate of 193,500 packet/sec and can be managed by any SNMP-based management platform.

The switch is priced at less than \$200 per port and is available now.

©Compaq: (800) 345-1518; UB: (408) 496-0111.

## WIRED WINDOWS



## How well positioned is Microsoft for intranets and the 'Net?

**I**t's been a few months since Microsoft Corp. announced and put into place a major reorganization of its business units. Included in this was a new Internet and intranet unit that appeared to be a major focus of the company. The unit is under Brad Silverberg, the man who so successfully brought the various Windows products (including Windows 95) to market.

But curiously, there was little notice taken of this new Internet and intranet focus at last week's NetWorld+Interop 96 show in Las Vegas. Microsoft Chief Executive Officer Bill Gates kicked off the event with a keynote address in which he mentioned NT Server (for the NetWorld crowd) and the proposed point-to-point tunneling protocol (for the Interop folks), but the bulk of his message was about the long-awaited and delayed Exchange Server.

Since veteran show attendees had been hearing about Exchange for two to three years, it was a decidedly ho-hum message for them.

This was especially noticeable when Novell, Inc. CEO Bob Frankenberg took the stage a few hours later with a whiz-bang demonstration of Novell's Internet, intranet and

remote connectivity products for NetWare.

Another clue about Microsoft's seemingly unimplemented Internet and intranet strategy came with the debut of Interop DotCom, a "show within a show" dedicated to the business use of the Internet and intranets.

According to Softbank Expo, which runs NetWorld+Interop, each of the Interop DotCom participants was hand-picked and invited to participate. Novell was there, as were Lotus Development Corp., Sun Microsystems, Inc., Netscape Communications Corp. and more than 50 other hardware and software companies. Notably absent was Microsoft.

Mike Millikin, a Softbank senior vice president, said Microsoft was invited to participate in Interop DotCom but declined. He said the company told Softbank it couldn't be ready in time. Microsoft did, however, hold out the possibility of participating in future shows.

We have heard a lot from Microsoft recently about Explorer and Internet Information Server, the company's Worldwide Web browser and server products. What we haven't seen, though, is how these products integrate into a coherent intranet strategy.

The LAN is fast being subsumed into the intranet. HTTP, HTML, Java — these are the protocols, tools and concepts that will make up a large part of a network administrator's job in the not-so-distant future.

Novell has shown a surprising dexterity at integrating, or at least announcing the future integration, of intranet concepts within NetWare. Even IBM is showing signs it will be ready with an integrated intranet strategy.

Microsoft appears to still be trying to formulate a game plan and faces the possibility that, for the first time in a long time, it will be the follower rather than the leader as new technology emerges.

*Dave Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at dkearns@msn.com.*

### Tip of the week

*Worried about Internet or intranet security? I'd suggest taking a look at Hmpg, Inc.'s webSCREAMER. It promises to eliminate the complications associated with setting up routers, gateways, firewalls, hubs, terminal adapters, modems, Web servers and mail servers. The company's home page is at <http://www.hmpg.com>.*

### NET RESULTS

## Ethernet and Fast Ethernet: Still the users' choice

**T**he more things change, the more they stay the same.

While the campus LAN vendors would have you believe users can't get enough of all these new and improved technologies such as Asynchronous Transfer Mode, the fact remains that users are sticking with what they know—and what works.

A recent survey we conducted of 166 mid- to high-level network users shows legacy LANs are still strong at both the desktop and the secondary backbone level (wiring closet to data center or building backbone). FDDI continues to be the backbone of choice for centralized computing environments, while Fast Ethernet is becoming a popular choice for distributed server environments.

The survey, which asked users about purchases they expect to make in 1996, indicated Ethernet and token ring will continue to dominate the desktop, despite a big push from the 100Base-T and 100VG-AnyLAN camps to position their technologies in that space.

When users were considering high-speed desktop connections to support bandwidth-hungry workgroups or specialized applications, Fast Ethernet was the clear winner, growing 57% from 1994 to 1995 and expected to grow 125% from 1995 to 1996. The rise in popularity of 100Base-T is primarily due to the low price and widespread availability of 10M/100M bit/sec Ethernet adapters.

Although many of these adapters are not currently operating at 100M bit/sec, they are viewed as insurance against unforeseen bandwidth issues. Positioned well by the vendors, a 10/100 adapter can be purchased for 1.2 to 2 times the cost of a good 10M bit/sec card.

To put the various high-speed backbone options in perspective, we need only look back to 1994, when FDDI was the only established

100M bit/sec technology to be standardized and widely available. In 1995, FDDI was revitalized through FDDI switching, which is being deployed for centralized server farms.

Fast Ethernet came into play in the secondary backbone in 1995 as both a fat pipe to the data center, aggregating multiple 10M bit/sec Ethernet segments, and as a high-speed connection to servers in distributed workgroups. Users expect to install 177% more Fast Ethernet backbone connections this year than last.

In 1996, we expect to see more Fast Ethernet used in distributed workgroups as a wealth of products become available and prices drop. Today, FDDI remains a good option for centralized computing backbones. Use of Ethernet switching will increase in the secondary backbone to decrease latency and increase bandwidth in shared environments.

Prices are at an all-time low, and there is little risk for desktop connections. The newest technology to make headway is Fast Ethernet. Although this technology is latent at most desktops, it is a good solution for distributed server connections and as a secondary backbone to aggregate segmented desktop LANs.

FDDI is still the LAN technology of choice for corporate backbones because, due to its deterministic nature, it provides a reliable and predictable technology for critical operations. Although users can implement reasonable ATM networks today, mainstream implementation will not begin until the second half of 1996.

*Skip MacAskill and Melinda Le Baron are research directors at Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached by E-mail at inquiry@gartner.com or by phone at (203) 316-1111.*



Skip MacAskill  
and Melinda Le Baron



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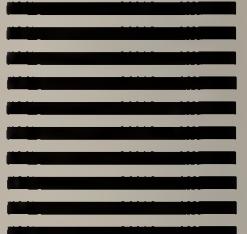
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Mike wants to upgrade his company to Lotus Notes Release 4.

If 2,352 people in 8 departments will use it, how many servers will Mike have to add?

- a) 4    b) 8    c) 12

The correct answer is:  
d) None of the above.

Because Mike chose the RS/6000 Notes Server, he can add users without adding servers.

Boy, that was an easy one.



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do this?

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What's more, with the RS/6000 Notes Server you'll be able to manage your entire network from one easy-to-access location.

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How can the RS/6000 Notes Server help your company get more out of Lotus Notes Release 4? For the correct answers, visit us on the Net at [www.rs6000.ibm.com](http://www.rs6000.ibm.com) or call us at 1 800 IBM-3333, ext. FA231.



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# Client/Server Applications

Covering: Databases • Messaging • Groupware  
Conferencing • Imaging • Multimedia • Development

## Briefs



**Sybase, Inc.** last week reorganized into two main groups. The Enterprise Business Group, under **Dennis McEvoy**, includes the company's database and middleware products, and is aimed at large customers. The Powersoft Business Group, under **David Litwack**, includes the development tools and workgroup database products. Both McEvoy and Litwack report to **Mark Hoffmann**, Sybase president, chief executive officer and chairman.

**Mitchell Kertzman**, formerly CEO of subsidiary Powersoft Corp., is now executive vice president of sales and marketing.

**Passport Corp.** (formerly InSync Software Corp.) in Paramus, N.J., has announced improvements to its Passport fourth-generation language development tool set, which is aimed at multitiered, distributed applications. Passport 8.1 offers developers a simpler process for creating Passport application servers, a revamped user interface, and a new Visual Object Browser that lets users select an object from a Passport application and visually incorporate it into a new application.

Passport 8.1 is available now for \$7,995 per developer on a wide range of client and server platforms.

Passport: (800) 926-6736.

**Expersoft Corp.** in San Diego has begun beta-testing a Windows NT version of its PowerBroker object request broker. The PowerBroker Extended C++ for Windows Programmers creates what the company says is the first distributed object environment for Microsoft Corp.'s Visual C++ and Windows NT 3.5.

The product will be released by June, with developers' licenses starting at \$3,500.

Expersoft: (800) 366-3054.

## NobleNet tool extends ODBC-based apps

By John Cox

Southborough, Mass.

New software from NobleNet, Inc. helps application developers use industry-standard APIs, such as Open Database Connectivity (ODBC), to create three-tiered applications.

The company's new OneDriver tool kits let C or C++ programmers reduce the amount of code running on client PCs, blend several APIs into a single network connection and add a range of custom features to each API.

The first tool kit, called OneDriver ODBC, lets programmers shift parts of ODBC from the client PC to what NobleNet calls an application server, creating a middle or third tier to the application. From this server, the

Tool up on ODBC and other APIs on Network World Fusion (<http://www.nwfusion.com>). Select News+ then Client/Server Applications.

NetworkWorld  
*Fusion*

ODBC Driver Manager calls one or more target databases. This new tier reduces the amount of code on the client and lets client applications use a single driver to access multiple ODBC databases.

"Today, once you enter the ODBC layer, you don't have any control over it or any ability to make enhancements," said Steve Lemmo, NobleNet's chief technology officer.

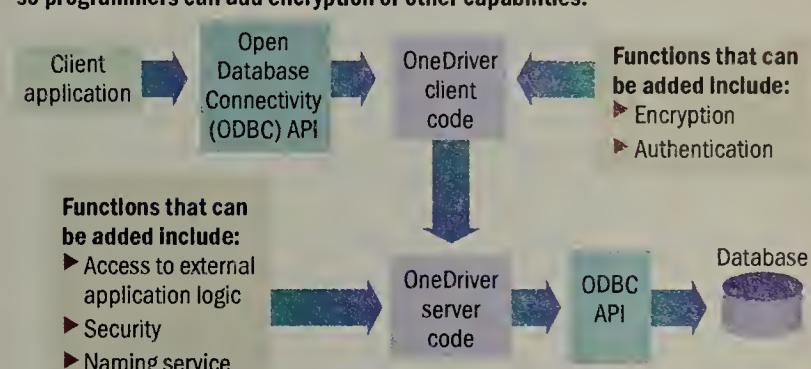
When used with NobleNet's EZ-RPC product, which generates network communications code for client/server applications, OneDriver ODBC lets an application access other network services and application logic.

The product architecture allows multiple API calls to be funneled over a single OneDriver connection to a server. This multiplexing simplifies programming, improves performance over the network and makes it easier to share data on the server side among different APIs, Lemmo said.

NobleNet is preparing OneDriver kits for other APIs, including Novell, Inc.'s Telephony Service API. Other APIs being

### Putting ODBC in the OneDriver seat

NobleNet's OneDriver creates an interface to standard APIs, such as ODBC, so programmers can add encryption or other capabilities.



GRAPHIC BY TERRI MITCHELL

considered are the NetWare Directory Services and Open Document Management APIs.

The OneDriver ODBC software development kit is available now for \$2,500 per server for

unlimited users. The software runs on Windows 3.1, Window 95 and Windows NT clients, as well as on Windows NT and various Unix servers.

©NobleNet: (508) 460-8222.

## PeopleSoft integrates OLAP tool

By Barb Cole

Burlington, Mass.

PeopleSoft, Inc. last week said it will make unlocking corporate data residing in its client/server business applications easier for customers by bundling Cognos Corp.'s on-line analytical processing (OLAP) tool with its applications.

vendor performance in terms of pricing, delivery times, return rates and quality. Users may then use Impromptu to automatically deliver that data daily to managers or generate printed reports.

PeopleSoft currently bundles its own query tool with its applications, but that software does not include OLAP features.

PeopleSoft may have selected PowerPlay due to its advanced security features, analysts said. The Pleasanton, Calif.-based applications maker was stung last year by criticisms that there were holes in its client-side security.

Analysts said the bundling deal is a smart move on PeopleSoft's part. "Most of the data that corporate users care about is in financial applications, so [including an OLAP tool] will be beneficial to PeopleSoft customers," said Howard Dresner, an analyst at Gartner Group, Inc. in Stamford, Conn.

Under the agreement, PeopleSoft will provide a version of Cognos PowerPlay to all its customers by fall, allowing end users to slice and dice through data using a Windows interface.

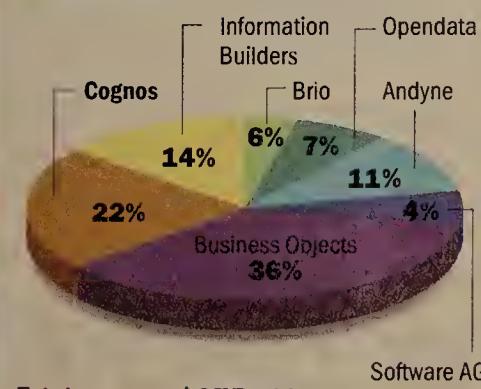
In addition, Cognos will integrate its Impromptu query and reporting software with PeopleSoft's applications.

PowerPlay will enable users of PeopleSoft financial applications to, for example, evaluate

### 1996 WORLDWIDE QUERY TOOL MARKET SHARE

Total revenue: \$275 million

GRAPHIC BY TERRI MITCHELL SOURCE: META GROUP, INC., STAMFORD, CONN.



## New version of Notes Network due out

By Carol Sliwa

Cambridge, Mass.

Lost in the hubbub over AT&T's Network Notes is the fact that Lotus Development Corp. has its own proprietary network for linking Notes users.

Last week, the company unveiled support for higher speed modems and the ability to make connections via the Internet.

Release 2.0 of the Lotus Notes Network (LNN), due out at the end of the month, will support 28.8K bit/sec X.25 connectivity through CompuServe, a step up from the 14.4K bit/sec X.25 point-to-point access offered through AT&T.

But it is the Internet connectivity option that subscribers like Max Burgstahler, a senior systems analyst with Illinois Power

Co., find most interesting. "It's probably cheaper than a long-distance phone call to Cambridge," he said. "Right now, we're just using regular dial-up voice lines to get to Cambridge."

Other new LNN elements include direct access to LNN servers from individual desktops — a feature that should prove to be particularly useful for remote users — and discussion group postings from the Worldwide Association of Lotus Notes Users and Technologists.

Subscriptions to LNN are \$75 per month for unlimited internal redistribution and \$25 per month for individuals. CompuServe, Inc. makes the X.25 transport available for \$14.95 per hour. Internet fees depend on the user's access provider.

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## SHARED LOGIC

## Where applications and networking meet

**I** come to *Network World* from the applications side of the business, and it's been an interesting education to see where the applications and network worlds collide, diverge and then rejoin in the end.

We recently completed beta-testing a new product that recommends both client/server and logical network architectures based on user requirements. As we worked through the various issues that arose with the users, it dawned on me that there is a huge gap separating the applications developers from the network specialists in most organizations.

Here is how it seems to work in most cases: The business people create a requirement for faster, more informative, easier-to-use systems. The applications people haul out their GUI, database and interprocess communication tools and respond to the requirement. Meanwhile, the network people rush madly between the business and applications people, trying to figure out what kind of scheme is being hatched to upset the already tenuous balance of the enterprise net.

For example, one of our beta sites, a large insurance firm in the Midwest, "asked"

our product for architectural recommendations on a two-year nationwide personal accounts claims management system being completed this year. As expected, the recommendation was for a three-tier client/server architecture and a switched FDDI backbone network.

The company's only problem with the beta test was that it already had committed to a two-tier architecture and the company has no control over the network implementation. The director of the development team secretly believes the multimillion-dollar application his developers are sweating over is going to end up in the garbage because it won't be able to support the thousands of users that will need to access the system simultaneously every day. But since the company has spent half the budget, there is no way to turn back. The two-tier application will be deployed on whatever network topology is available, and it will probably run reasonably well for a year or two, until it really starts being used by everyone. Then the performance will degrade, eventually becoming unacceptable.

Many companies have already gone through something similar to the above scenario. The millions of dollars that have been thrown away on client/server systems development is astonishing. And the most interesting part is that many of these losses could have been avoided had the networking and applications people participated in a joint design effort.

The reason this happens so rarely is

because most IT departments are organized according to mainframe standards, where applications development and network engineering rarely meet.

Now it is necessary to approach each development effort with a combined

applications/networking expertise base. For many organizations, finding real experts is the major challenge. For others who have plenty of expertise, the challenge is to convince management that successful systems are not built by throw-

ing some GUI screens and database queries at the problem. Systems have to be engineered from the ground up using the combined knowledge of your network and software engineers.

*Marc Myers* is president of Client/Server Connection, Ltd., a Cambridge, Mass.-based firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332, 1726.



**Marc Myers**



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**Loves second-hand clothes.**

**Has two cats named Bob.**

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It's an impressive list of features. But it has to be. Because the whole world, unfortunately, is watching.

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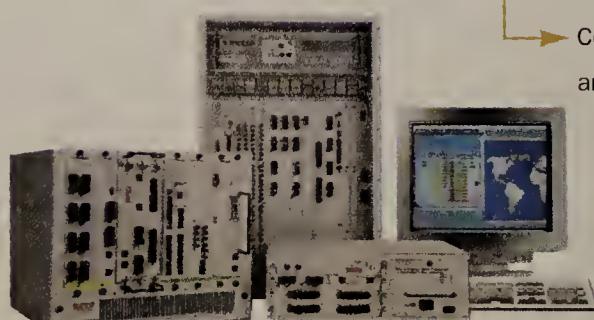
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# Intranets & the 'Net

Covering: Internet Technologies and Services  
for Collaboration and Electronic Commerce

## Briefs

**Harbinger Corp.** this summer will ship a \$125 Web site builder called **TrustedLink Instant Internet** for use by small and midsize companies to create and maintain a World-Wide Web site. Harbinger also said it will provide a \$50-per-month Web hosting service with links to the Harbinger Commerce Directory of electronic data interchange users.

Harbinger: (800) 367-4272.

**IBM** said it will give away IBM Internet Connection Servers Version 4 for AIX, OS/2 Warp and Windows NT. To get the **free software**, visit the company's Web site by linking to [www.wics.raleigh.ibm.com](http://www.wics.raleigh.ibm.com).

**TSI International Software, Ltd.** last week announced **EDI translation** software called Trading Partner PC/32 for Windows 95 and Windows NT that includes access to value-added networks and the Internet. Trading Partner PC/32, scheduled to ship in the third quarter, costs about \$2,000.

TSI International: (203) 761-8600.

**Representatives Rick White (R-Wash.) and Rick Boucher (D-Va.), along with Senators Larry Pressler (R-S.D.) and Patrick Leahy (D-Vt.), have formed the bipartisan Congressional Internet Caucus as a forum for education and debate on Internet issues.**

The group has its own Web page at [www.house.gov/white/internet\\_caucus/netcauc.html](http://www.house.gov/white/internet_caucus/netcauc.html).

**Secure Computing Corp.** last week introduced NetRanger, Windows 95-based **electronic mail and browser software** that encrypts information from desktop to corporate firewall. Secure Computing also unveiled Diamondback, an intranet firewall to support encryption of IP, IPX and SNA traffic within an organization.

Secure Computing: (612) 628-2745.

## Harbinger gives EDI and Internet twist

By Ellen Messmer  
Atlanta

The EDI traffic that businesses today consign to the VANs will travel tomorrow on the Internet, as well, according to veteran EDI software and service provider Harbinger Corp., which is getting ready to go with the flow.

This June, Harbinger will ship software that can sort through a corporation's outgoing electronic data interchange files to determine the ones the user actually wants to send over the Internet instead of through a value-added network. The software, called TrustedLink Guardian, then wraps the In-

ternet destined EDI file in an encrypted electronic mail envelope and dispatches it.

Use of the Internet for EDI could save a lot of money because the EDI VANs tend to charge by the kilobyte. But the VANs will continue to play a critical role because many larger EDI users want the closed network security and special processing functions a VAN provides and the Internet, so far, does not.

Recognizing the need for coexistence, Harbinger is setting up an Internet-to-VAN gateway that will take Internet EDI messages, strip off the encryption and send them to the intended

VAN. The approach works even if the VAN is not Harbinger's, but one operated by rivals Sterling Network Services or GE Information Services (GEIS).

Harbinger is calling the EDI E-mail gateway its Internet Value Added Network Server, said Steve Youngblood, Harbinger's product manager for net services. The gateway will handle EDI messages encrypted in the Secure Multi-purpose Internet Mail Extensions and Privacy Enhanced Mail standards, and possibly the Premenos Corp. proprietary Templar secure mail format.

In the complex world of EDI, companies frequently want VANs to provide special process-



**Harbinger's Howle**  
says using the  
Internet for EDI  
will help small  
firms compete with  
the big ones.

ing, such as adding spaces to specific fields in order to map EDI transactions to specific business applications. The Harbinger Internet-VAN gateway will act as an intermediary in tasks such as these. It will then spit EDI messages back onto the Internet for final delivery if it is not sent to a VAN.

The Harbinger Internet EDI mailbox service will cost about \$5 per month, with an additional \$10 or more for special processing.

"We don't mind if, in five years, the VANs may be gone," Youngblood said. "Our primary service is enabling trading partners to trade."

Use of the Internet for EDI, still a rarity today, will help smaller companies do electronic commerce with the big guys, said Tycho Howle, Harbinger chairman and chief executive officer.

"There are 100,000 companies doing EDI now," Howle said. "But there are six million businesses in the U.S., and we need to bring them into the fold."

Soon, an Internet presence will be as prevalent as fax is today, but many customers will prefer the hybrid approach, using both Internet and VANs, Howle added.

### GEIS weighs in

EDI veteran provider GEIS is also moving toward EDI on the 'Net but more warily. GEIS recently began offering EDI software that works with PC-card encryption so users can send messages over the Internet to the GEIS VAN in a secure manner. However, the software does not support transactions directly over the Internet.

For EDI users willing to dispense of ironclad security, GEIS will soon be announcing its second Internet product, Web-based EDI forms that will be posted on its Web site, [www.gebusinesspro.com](http://www.gebusinesspro.com). "This is for small businesses that want to communicate electronically," said Rhonda Glenn, GEIS product manager.

The GEIS Internet EDI software will be designed to dispatch messages only to the GEIS VAN — in effect, preventing the Internet from displacing GEIS VAN services. ■

## Attachmate ready to answer 'Net questions

By John Robinson  
Bellevue, Wash.

Recognizing that more Internet users generate more Internet questions, Attachmate Corp. last week launched two help desk phone services for on-line novices.

Corporate Internet Help Desk, a telephone consulting service for large corporations, and Internet Co-Pilot, a 1-900 hot line for the small office/home office (SOHO) market, provide technical support and answer questions about common Internet problems, company officials said.

This way, IS professionals can focus on more pressing concerns. "We want to be the information operator for the

Internet," said John Schneider, vice president of support products and services at Attachmate. "With a help desk service over the phone, people can get answers to their questions more quickly than flipping through manuals or waiting for technicians to help."

The corporate service is targeted at companies with proliferating Internet and intranet services, where overburdened IS departments cannot handle the large volume of user calls and questions.

After a one-time setup charge, corporations are charged a fee for each call received at Attachmate's operations center, where a team of operators answers questions and provide instruc-

tion. Operators use the Internet, search tools and databases to help solve technical problems.

The service is vendor-independent, but Schneider said specific problems with another vendor's Internet hardware and software will be referred to that vendor's technical support line.

With Internet Co-Pilot, Attachmate hopes to target members of the SOHO and telecommuting markets who are now realizing the advantages of conducting business over the Internet but have no technical support services to rely on.

Based on a per-minute phone charge, the service is designed to give callers quick help with general Internet problems along with instruction on how to take advantage of the Internet for business.

Schneider said Internet Co-Pilot may even blossom to accommodate the average home user. To reach that market, Attachmate is negotiating partnerships with modem and browser manufacturers to combine the service with those products.

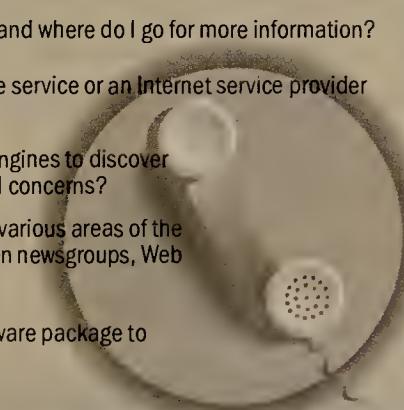
Pricing for the Corporate Internet HelpDesk starts at \$1,000 for initial setup and is \$11 per call. Internet Co-Pilot is available for \$1.45 per minute at (900) 976-7500.

©Attachmate: (206) 644-4010.

### Just the FAQs

#### Frequently asked questions at the Corporate Internet HelpDesk and Internet Co-Pilot hot lines:

- What do I need to access the Internet and where do I go for more information?
- How do I determine whether an on-line service or an Internet service provider is appropriate for my needs?
- How do I choose and employ search engines to discover Web sites addressing my interests and concerns?
- What are the differences between the various areas of the Internet, and how do I navigate between newsgroups, Web sites, E-mail and FTP sites?
- How do I choose and configure a software package to restrict my children's Internet access?



# Microsoft cooking up tasty technology tidbits in Explorer

By Peggy Watt  
Redmond, Wash.

Although Microsoft Corp. is busily beta-testing its Internet Explorer 3.0 browser, the release after that is the one that adds a

new spin with features such as local data directories that look like Web pages and a personal Web server.

Internet Explorer 3.0 is scheduled to ship for Windows 95 by July and for other

platforms by year-end.

But more significant new features will first arrive in the Internet add-on known as Nashville, and will then be implemented in later commercial versions of Explorer for Windows 95 and Windows NT late this year.

For example, Microsoft has promised that the Nashville add-on will provide a Site Map that displays a hierarchical chart of both file and network directories as well

as icons designating Web pages. The configuration is similar to the Windows 95 Explorer screen, which replaced the Windows 3.1 File Manager.

But Nashville and versions of Internet Explorer after 3.0 will also offer the reverse. Users will be able to navigate and view local files and directories with an interface that resembles a Web browser and uses common browser commands, said Mike Ahern, Explorer product manager.

That configuration will let users move among windows and even applications using VCR-style forward and back buttons, a feature key to browsing Web pages. The local and intranet directories themselves will be presented through an HTML template that resembles a typical Web page, with variable-size text and icons. For example, subdirectories are represented as large icons, and the hard disk directory name appears in large, HTML headline-style text.

Nashville, to be sold commercially, is essentially a superset of Explorer and provides features beyond those in the basic browser, which is distributed free of charge, Ahern said. "It will add the combination of [local, network and Web file] menus and a news reader," he said. "The network manager can use HTML templates and customize or change them to set up the user's interface to local files."

Net managers can also tie the view to a user's access privileges so it displays only files to which a user has access. Users can share the templates on an intranet or peer-to-peer LAN.

## Exploring 3.0

The primary additions to Explorer 3.0 are support for ActiveX multimedia controls and support for frames. Frames divide a Web page view into several segments that can change based on a user's inquiry or input, so a Web page may appear differently to each user. Netscape Communications Corp. implemented frames in Navigator 2.0, but Microsoft wanted to go one better by handling floating frames and frames of any shape, not just rectangles.

Meanwhile, Explorer's support for ActiveX client controls, which are Web-enabled OLE extensions, serves some of the same functions as Navigator's plugins. Ahern said a key difference is that users can write scripts using tools such as VBScript to drive the controls, while plugins are usually not modifiable by users.

The hottest new browser features will appear first on Explorer for Windows 95. Updates for Windows NT, Windows 3.1 and Apple Computer, Inc.'s MacOS are expected to lag about six months behind the Windows 95 version. For instance, beta-testing of Explorer 3.0 for those platforms is expected to begin this summer. ■



If your visions of the future look anything like this, Networks3 is the next best thing to a good therapist.

Put your fears about the future of networking to rest at the premier event of this season: Networks3. Taking place this June 3rd–6th at the Westin Hotel in Santa Clara, the event will provide key insights into future technologies as well as opportunities to exchange ideas with peers and learn how to integrate new technologies.

Along with renowned industry speakers, the event will feature thirty-two different networking workshops as well as a Technology Solutions Lab, where network

design consultants will demonstrate customized solutions to tough network challenges.

The cost of attendance is \$395 per person. But if you register before May 3, you'll save \$100. For more event information or to register, call 1-800-746-2185. Or reference our web site at <http://www.3com.com>



# Technology Update

Keeping Up with Network Technologies and Standards

## NETWORK HELP DESK

Network World tracks down answers to your questions. Please submit them to Chris Nerney via phone at (800) 622-1108, Ext. 451, the Internet at [cnerney@nw.com](mailto:cnerney@nw.com) or fax at (508) 820-1103.

**What are the differences between the Secure HyperText Transfer Protocol (S-HTTP) and Secure Sockets Layer (SSL), which are protocols that provide transaction security on the World-Wide Web?**

### Via Network World Fusion

On-line Editor Adam Gaffin found a frequently asked question file on the Web that provides an overview of both protocols and provides links to documents with more detailed information.

Essentially, SSL is being proposed by Netscape Communications Corp. as a way to use a low-level encryption scheme to encrypt transactions in higher level protocols such as HTTP, Network News Transfer Protocol and File Transfer Protocol.

S-HTTP is being proposed by CommerceNet, a coalition of businesses interested in developing the Internet for commercial uses. It is a higher level protocol that only works with HTTP, but is potentially more extensible than SSL.

For more information, visit Network World Fusion at <http://www.nwfusion.com>. Select Forums, then Help Desk and click on Topic 41.

**How can I get Microsoft Corp. Windows 95 clients to establish a dial-up link with a Novell, Inc. NetWare 4.1 server running NetWare Connect Version 2.0?**

### Via Network World Fusion

Novell issued a patch to address this problem, says Dave Kearns, a freelance writer and consultant in Austin, Texas.

You can download the patch file, NWRNS.EXE, from Novell's World-Wide Web site.

The file is also available in library 1 and library 3 in the NWGENFILES forum on CompuServe.

Novell says if you upgraded to NetWare Connect Release 2.0.25 using the NWC201.EXE file, you do not need this patch.

If you have a release of NetWare Connect 2.0 prior to 2.0.25, you should download NWC201.EXE and NWC202.EXE instead.

## Fast Ethernet is here to stay

By Ken Okin and Tony Lee

As technological migrations go, the industry's move to Fast Ethernet is setting records for speed and efficiency.

Three years ago, 100Base-T was little more than a novel idea. Today, it's a de facto standard, apparently destined to replace older 10Base-T Ethernet as a

Fast Ethernet switches and hubs — which can be deployed to eliminate bottlenecks between file servers and desktops — to provide higher bandwidth to groups of users or to increase performance to all clients.

Fast Ethernet sales are outpacing all other high-speed LAN technologies, according to Inter-

Migrating from 10Base-T to 100Base-T can be as simple as swapping adapter cards and upgrading a few hubs and switches.

User adoption has been further fueled by the wide range of products and by rapidly falling prices. For example, users can pick from an array of 10M/100M bit/sec Ethernet adapters, some selling for as low as \$150, compared to \$75 or so for conventional 10M bit/sec Ethernet cards. At that price, it makes sense for many organizations to install Fast Ethernet adapters now, even if they're not yet ready to upgrade their entire network.

### Measurable benefits

Fast Ethernet gives the estimated installed base of 70 million Ethernet users a way to dramatically boost network performance and accommodate today's bandwidth-hungry applications with minimal expense and effort.

At Sun Microsystems Computer Corp., network speed has improved markedly since our company replaced an FDDI backbone with Fast Ethernet. File transfer speeds have improved at least fourfold, from a maximum of 1M byte/sec to an average of 4M byte/sec, and users have experienced two-to-three times faster response in client/server interactions. Additional improvements will be possible by moving to a switched configuration; the current network uses a shared scheme.

### Unlimited future

In light of current trends, a bright future seems assured for Ethernet. Its popularity will increase as equipment prices continue to drop.

Computer system vendors, for example, have begun integrating 10M/100M bit/sec Ethernet interfaces on the computer motherboard, cutting the cost to customers and eliminating the job of installation. Sun provides such integration with its Ultra workstations, and other suppliers are sure to follow. Of course, this move makes sense only if the system as a whole has the throughput and processing power to exploit Fast Ethernet's

Find more info on Fast and faster Ethernet technologies on Network World Fusion. Select NetRef, Technology Resources then LANs/Network Operating Systems.

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<http://www.nwfusion.com>

higher data rates. Fast microprocessors, high-speed I/O paths and peripherals come into play.

In addition, Ethernet technology continues to advance. The IEEE is moving ahead with plans to standardize full-duplex Fast Ethernet, which will raise bandwidth beyond current half-duplex implementations. Though some vendors do offer proprietary full-duplex schemes, standardization will provide the significant advantage of multi-vendor interoperability.

And gigabit Ethernet lies ahead, too. The IEEE already has a study group working on a 1000Base-F proposal that, while using fiber-optic cable for its physical layer, will retain the CSMA/CD-based media access control layer of previous Ethernet technologies.

The aim is to make 1,000-Base-F backward-compatible with 100Base-T and 10Base-T, preserving a smooth migration path. Demand for gigabit Ethernet is likely to heat up as more LANs move to 100Base-T, putting huge traffic loads on backbone networks. But the story doesn't stop there, since full-duplex and trunking schemes can be used to push Ethernet bandwidth even higher.

Okin is vice president of engineering and Lee is senior product manager at Sun Microsystems Computer Corp. in Mountain View, Calif. E-mail them at [ken.okin@eng.sun.com](mailto:ken.okin@eng.sun.com) and [tony.lee@corp.sun.com](mailto:tony.lee@corp.sun.com).

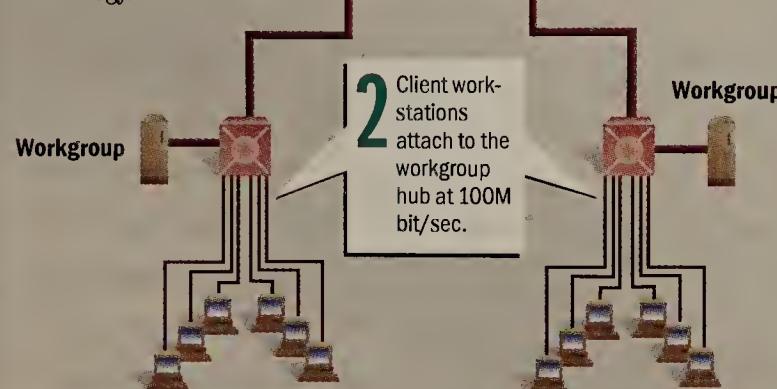
## Need information?

Let Network World provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Beth Schultz by phone at (312) 283-0213 or via the Internet at [bschultz@nww.com](mailto:bschultz@nww.com).

## UP CLOSE

### Gigabit Ethernet

The proposed gigabit Ethernet standard uses fiber-optic cable and retains the CSMA/CD-based MAC layer of the existing 10M/100M bit/sec LAN technology.



mainstay of local-area networking. And the technology continues to advance, with plans for full-duplex and gigabit Ethernet on the horizon.

This rapid acceptance points to the advantages of broad support and technology that builds seamlessly on previous standards. Fast Ethernet won IEEE 802.3 standards approval in a mere 13 months. From the start, it garnered wide industry backing, which led to rapid product interoperability efforts.

### An eager market

Today, buyers can choose among more than 100 products — adapter cards, bridges, hubs, routers and switches — from some 75 vendors. This gives network managers wide latitude when it comes to selecting Fast Ethernet products. For instance, they can choose from a variety of

national Data Corp. of Framingham, Mass. The market research firm reports that 650,000 100Base-T adapters shipped in 1995, compared to 220,000 for 100VG-AnyLAN, 40,000 for Asynchronous Transfer Mode and 120,000 for FDDI.

Momentum has built quickly due to the evolutionary nature of the technology. The 100Base-T standard is a logical extension of 10Base-T, using the same carrier-sense multiple access with collision detection (CSMA/CD) protocols and much of the same infrastructure. Unlike ATM and FDDI, Fast Ethernet can take advantage of Category 3 twisted-pair wiring found in many older Ethernet installations.

It runs existing application software and requires a minimal learning curve for experienced Ethernet users and network administrators.

### EDITORIAL INSIGHTS

## A hacker's dream come true

If you listen closely enough, you can hear the hackers snickering. They are biding their time, fidgeting quietly in the shadows as they watch corporate America rush to stock intranets with company secrets.

Sales reports, compensation records, documents concerning inventory levels and turns, assessments of market opportunities, manufacturing costs. You name it, it's all being migrated to intranets — the private networks organizations are building using Web and other Internet tools to simplify information sharing.

This is a hacker's dream come true. While many may be motivated by the sport of it, there are those hackers in it for the profit, and the stuff going up on intranets has high resale value.

Think your competitor wouldn't want to get his hands on your market projections? How about your prospect list?

Companies, of course, don't deal in black-market information. But your primary rival has a guy in the Midwest region named Russell who is having a rough year and facing his daughter's \$27,575 Harvard tuition bill next month. Is he still playing by the same rules?

Sure, you have firewalls and other safeguards in place to stymie Russell and other would-be thieves. But any security expert will tell you that where there is a will there is a way. Usually, it is only a matter of time.

Even if the intranet is securely shut off from Internet rogues — which is hard to guarantee if it touches the Internet at any point — the fact is intranets are designed to make more information available to employees, creating new vulnerabilities.

So what do you do? Turn your back on the hottest tool to come along since Lotus Notes?

Obviously, no. As economic consultant Peter Bernstein said recently in an investment newsletter, "The fish who won't bite at a piece of bait because he's afraid there's a fishhook in it is going to starve to death."

The hackers are out there waiting. But the benefit of intranets is too great to be paralyzed by fear. Just make sure you allocate more time and resources than usual when it comes to devising your intranet security strategy.

And don't make the cardinal blunder of plugging up the rat holes while leaving the barn doors open. In other words, expend as much energy on technical solutions to safeguard against hackers as you do on corporate policies that dictate acceptable use of the new information you're giving employees access to.

*John Dix, editor*

*jdix@nww.com*

*By Phil Frank and Joe Troise  
guru@well.com*

## Teletoons

### The Future of Telecommunications: May 15, 1996

*Underbudgeted for its obligation to write regulations for the Telecommunications Act of 1996, the FCC will hire high school students to help out.*



## RMON acquisitions may diminish users' hope for multivendor net management

**H**istory may remember early 1996 as the final chapter for independent Remote Monitoring (RMON) software developers. If so, it will be the result of a rash of acquisitions of the leading RMON players by the industry's mega-internetworking vendors — a move that is likely to lead to another round of unfulfilled promises.

The RMON wars began earlier this year during a two-week period in which two RMON companies — Armon Networking, Ltd. and Axon Networks, Inc. — were acquired by Bay Networks, Inc. and 3Com Corp., respectively.

These acquisitions not only raised the market value of Frontier Software Development, Inc., the only remaining independent RMON developer, but they also raised user expectations about the additional network management capabilities the industry's leading internetworking vendors could now integrate into their products.

Network management functionality has always been a concern of network administrators. But it has never been more critical than it is today, as organizations become more reliant than ever on their corporate networks.

Network administrators must now manage more varied and dispersed network infrastructures to accommodate distributed, client/server computing environments.

They must also contend with a growing number of remote workers who are demanding direct access into corporate data warehouses, as well as electronic mail and other collaborative communications applications.

And they must provide new forms of interenterprise communications, such as electronic commerce, to remain competitive in a rapidly changing marketplace.

The major internetworking companies have attempted to corner the market through a series of buying sprees.

The first wave was aimed at adding Asynchronous Transfer Mode capabilities to their networking portfolios. The second round focused on Ethernet LAN switching. And now we are witnessing the RMON craze.

The underlying motivation behind these moves is the same across all the major internetworking companies: They each hope to construct a one-stop shopping set of networking capabilities that will make it easier for users to select a single vendor to meet all their enterprise networking needs.

Some industry observers are already speculating that the latest RMON acquisitions will enable the internetworking titans to solve users' network management needs by incorporating RMON technology into their networking products. Others expect these vendors to include RMON capabilities in their basic service agreements to ensure that their products stay up and running.

The problem with the internetworking vendors' strategy is that it ignores the fundamental market



**Jeffrey Kaplan**

reality: Most users' networks are heterogeneous and multivendor in nature. Users were hopeful that the independent RMON software developers were on the path to creating products that would help them manage their multivendor networks.

Ironically, the RMON capabilities being acquired today are now less likely to fulfill users' multivendor network management needs. Instead, they will only help the internetworking vendors monitor their own products as they attempt to strengthen their respective competitive positions.

The net result of these acquisitions is diminished hope for truly multivendor network management products. The burden will continue to fall on users to construct a network management system to watch over their multivendor environments. Few users possess the internal skills to replicate the RMON capabilities captured in these acquisitions.

The irony of today's market is that while users have the luxury of every imaginable network management tool at their disposal, they lack the time and resources to take advantage of this technology.

A recent study by Dataquest, Inc. found that almost a quarter of today's network managers are turning to outside network integrators to help them select, install and operate these network management tools.

In this climate, it is no longer sufficient to offer users greater network management functionality without also offering them additional resources to exploit these capabilities. Building RMON capabilities into internetworking products will not solve this problem.

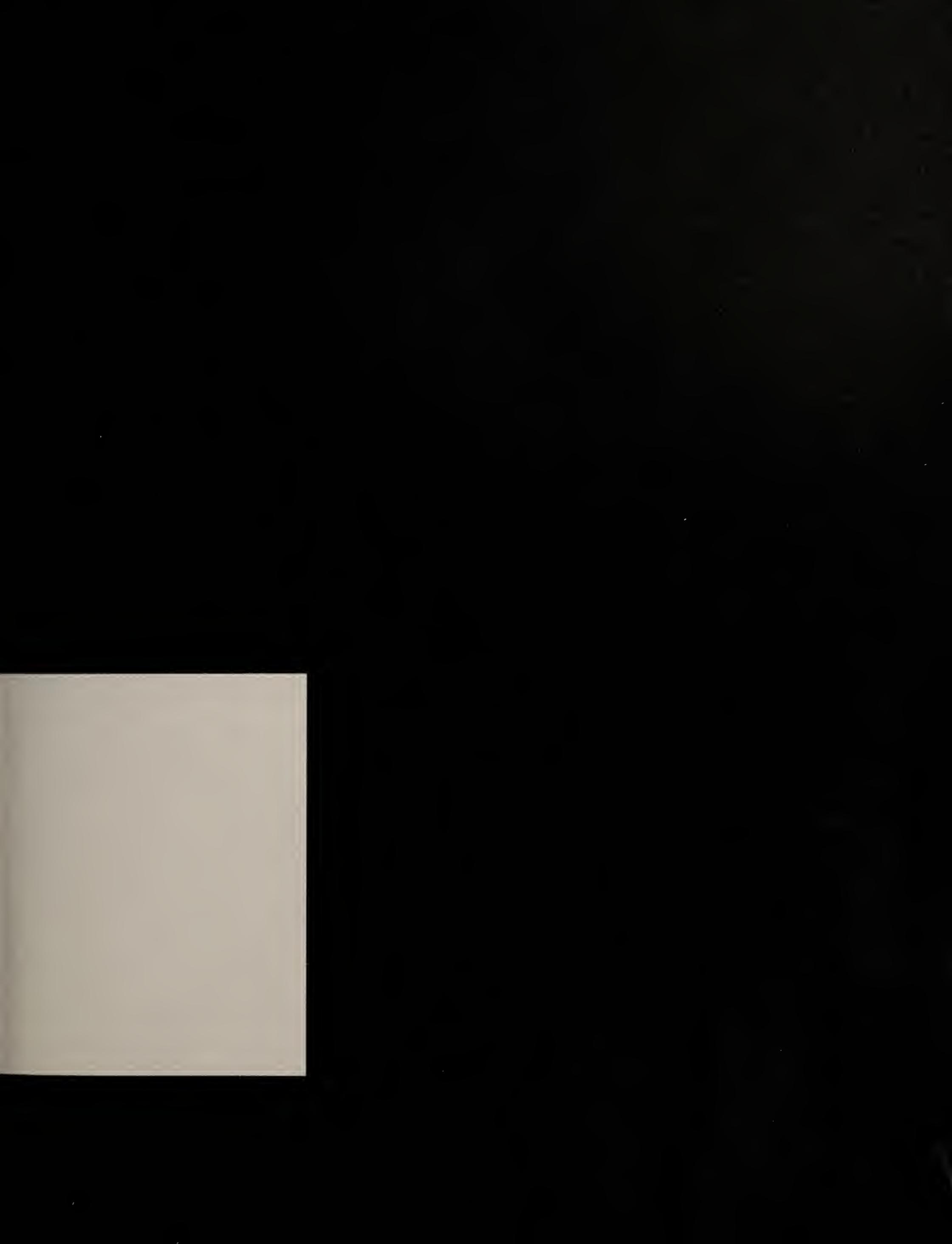
Users are demanding a broader array of network integration and management services to help them optimize network performance.

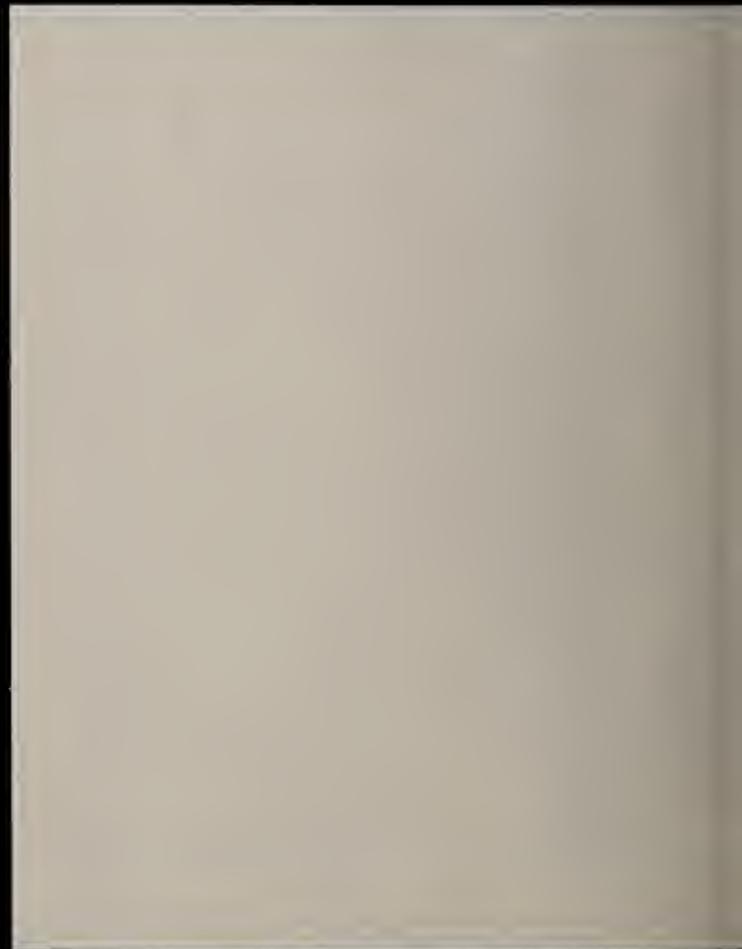
In the past, users called for help integrating their networks. Today, users are looking for help integrating their network management systems.

Network administrators should be wary of internetworking vendors that suggest they can solve users' network management needs by simply adding RMON capabilities to their proprietary products.

These features will fall short in a multivendor environment without customized configurations. Users should look for internetworking vendors that match their growing network technology arsenals with network integration and management services that will help users tie together the key elements in their enterprise networks.

*Kaplan is the director of strategic marketing for International Network Services, a Mountain View, Calif.-based network integration, management and consulting services company. He can be reached at his Boston office at (617) 376-2450 or via the Internet at Jeff\_Kaplan@ins.com.*





# Big Blue's continuing saga of missed opportunities

IBM's recently formed alliance with Cascade Communications Corp. marks yet another case of Big Blue having to acquire key networking technology from outside rather than developing it in-house.

Per the terms of the deal, IBM will manufacture and sell wide-area Asynchronous Transfer Mode switches that it will develop with Cascade.

During a joint briefing by IBM and Cascade executives on the alliance, IBM also announced a relationship with Sync Research, Inc., whereby IBM will resell Sync Research's frame relay access devices, key products in the growing frame relay market.

After spending billions of dollars in product development in the last decade, it is indeed sad to see that IBM has not been able to produce a single industry-leading product.

The story actually began in the late 1970s, when IBM acquired Satellite Business Systems (SBS) with the intent of getting into the satellite-based common carrier business. But unable to do much with SBS, IBM sold it to MCI Communications Corp. for a big stake in MCI. Then, IBM sold its MCI shares just before the carrier achieved success.

In the early 1980s, IBM acquired Rolm, arguably the most innovative PBX manufacturer of its time. But IBM quickly ran Rolm into the ground and was forced to sell it to Siemens AG. As the '80s rolled on, even with true-Blue technologies such as SNA and, later, Advanced Peer-to-Peer Networking, it was smaller vendors such as Digital Communications Associates, Inc., Data Connections, Ltd. and Eicon Technology Corp. that were developing far more innovative and cost-effective products than IBM.

Entering the 1990s, IBM had some serious issues to deal with. Its communications controllers remained stubbornly SNA-optimized, even as customers were moving to IP. Token-ring prices tried to resist market trend and lost. IBM tried to address its tardiness in the router market with the IBM 6611, but the product was a major failure. IBM had nothing to offer in the dominant LAN technology, Ethernet; later, Big Blue would also miss the boat on Fast Ethernet.

IBM was forced to look at other vendors to fill product gaps. Big Blue used Proteon, Inc. technology in its entry-level router, the IBM 2210. For collapsed backbone LANs with switching hubs, IBM had to go to Kalpana, Inc. Proteon is now tottering, and Kalpana



**Atul Kapoor**

has been acquired by Cisco Systems, Inc.

In the hot area of Simple Network Management Protocol-based network management, IBM was tardy again and had to go to arch rival Hewlett-Packard Co. for core technology for its SNMP platform.

Having missed the router revolution, IBM decided to leapfrog the competition by going directly to the next wave of technology: broadband switching-based LANs and WANs using ATM.

For the campus LAN, IBM's major product was the ATM-capable 8260 hub. But here again, IBM was unable to develop the technology internally and Chipcom Corp. had to chip in part of the technology. Alas for IBM, Chipcom — like Kalpana — is gone to the competition; 3Com Corp. now owns it.

For ATM-based WAN connectivity, IBM had the 2220 switch. It was going to be a powerful solution to fuel the new, smarter, aggressive Blue Machine. With the 2220, IBM was finally going to put upstarts like Cisco in their place.

Now, with the Cascade alliance, there is an implied admission by IBM that the 2220 is not going to meet its objectives. As Dan Smith, chief executive officer at Cascade, said during a briefing for consultants, IBM needs the Cascade technology to compliment 2220 in the Internet and common carrier market segments — the two key segments for ATM.

Alliances and relationships are not inherently wrong or bad. Look at Cisco's acquisition of IBM's I/O channel interface technology, a smart move on Cisco's part. But in the case of IBM, there is a disturbing pattern of reactionary moves in response to missed opportunities. And as a result, Big Blue has squandered enormous customer goodwill.

It is a sad state of affairs for IBM. Maybe Lutz Hahne, the company's new chief of networking hardware, will be the person to bring some order to this once-vaunted technology provider. If not, it won't be long before even the truest of Big Blue customers lose their patience.

*Kapoor is a principal at Kaptronix, Inc., a Haworth, N.J., consulting firm specializing in LAN/WAN technologies and network and systems management. He can be reached at (201) 385-0992 or via the Internet at kapoor@ibm.net.*

standards and drafts would work. Try <http://www.rpi.edu/Internet/Guides/decemj/text.html> for an index.

You will find that IP over ATM is covered mostly in RFC 1577. Other topics to look for are Next Hop Routing Procedure (a draft, not an RFC yet) and WinSock 2. You can find WinSock 2 data on Microsoft Corp.'s home page, <http://www.microsoft.com>.

## Java gibe

I just got through reading another article on the Java development language (Feb. 19, page 12). The article seemed to imply that people are just now realizing the need to put corporate data on the World-Wide Web for Internet and intranet access.

Are people really just now realizing this shortcoming of Java? Is anyone aware of all of Java's other shortcomings and limitations? Doesn't anyone look at other products out there that may be as good or — oh, my gosh! — even better?

The revelation that business data can be accessed by applications on the Web was realized long ago by the company I work for,

Speedware Corp. We even have customers that have already deployed working applications that access the data they need in an Internet and intranet scenario.

We are not a start-up company; we've been around for 20 years. Why not investigate companies like us?

*Todd Byrd  
Technical services representative  
Speedware Corp.  
Dallas*

## Keep it private

Regarding your editorial on privacy policies (March 18, page 36):

Years ago, I got into the habit of writing a Limit of Information Use statement on applications containing personal information. I state that the information provided is to be used solely for the purposes outlined on the application and may not be sold or used for any other purpose without written permission from me.

I don't know if it would stand up in court, but at least I make my desires known. I'll bet

*See Message queue, page 47*

## MESSAGE QUEUE

### Seeks ATM info

Regarding your article "Getting applications for ATM" (March 11, page 53): Where can I get requests for comment and other information on IP over Asynchronous Transfer Mode? This is a new arena for me, and I'd like to get smart.

*Jim Wallentine  
Silverdale, Wash.*

*Editor's reply: The traditional source of Internet RFCs is via FTP at ds.internic.net, but any of the many World-Wide Web sources of Internet*

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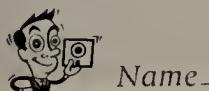
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# When it comes to net management users are hard to please

*Annual NW survey shows vendors have some work to do in applications and systems management arenas.*

By Elisabeth Horwitt

and John McConnell

**D**ow Corning wants to move beyond system-specific application and systems management. "We have different people responsible for [managing] different platforms. We work closely together, but we want to be able to watch everything from a central point," says Donald Ebersole, a systems administrator at the chemical company.

The ideal solution would be a management platform that can monitor systems performance and network changes within different domains "to ensure consistent configurations and make sure we meet performance levels across the company," he adds.

The problem has been finding affordable tools that meet Dow's integrated management needs. "As far as I'm concerned, that market is still in development," Ebersole says. "A lot of software companies promise you everything, saying [a desired feature] will be in the next release. I don't want to be a guinea pig."

Ebersole spoke for many of the respondents to *Network World's* 1996 Network Management Survey, which zooms in on systems and applications management issues. The survey, conducted for *NW* by McConnell Consulting, has a respondent base of 200 people who had either direct responsibility for systems management or supervised those who did.

This year, as with the past two years, product satisfaction ratings are stuck around the 3.5 mark—the equiv-

alent of "so-so," with 3.0 representing "neutral" and 4 meaning "some satisfaction." Those ratings apply to specific functions such as backup, security, software distribution and asset management (see Figure 1).

During post-survey interviews, the majority of respondents seemed to agree with Ebersole's assessment that the industry still hasn't delivered on long-standing promises for integrated, centralized, cross-system management.

"Real-time [systems and applications] problem management is very important for us, and I don't think there is much out there now" beyond system-specific solutions, says Ramaswamy Srikant, software engineer at DHL Corp. DHL, which currently uses Hewlett-Packard Co.'s OpenView, is still waiting for the vendor to deliver adequate "centralization of systems and applications management, and cross-domain management," he adds.

Another common complaint among users is the level of detail in the information collected. "The information you get on the management platform is hardly enough to do analysis," Srikant says. "Problems mainly show up as icons now. We need more tools that can diagnose and then fix the problems."

While there is much agreement on that, there is a virtually even split on the best architectural approach to take. The survey finds that 43% of respondents want distributed applications and systems management tools, and 44% want centralized management. However, only 22% cite definite plans to implement systems management frameworks such as Tivoli Systems, Inc.'s Tivoli Management Environment (TME) and Com-



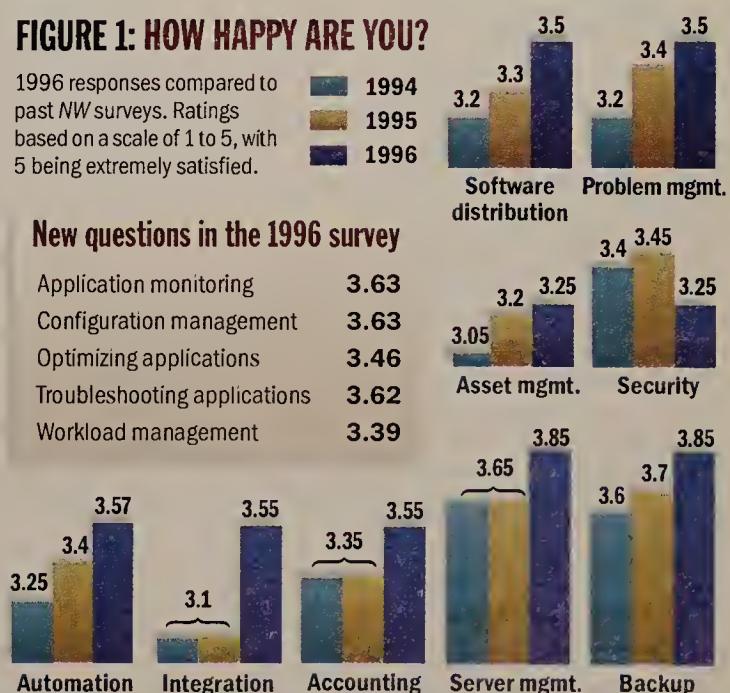
PHOTO COURTESY OF CORBIS-BETTMAN

**FIGURE 1: HOW HAPPY ARE YOU?**

1996 responses compared to past NW surveys. Ratings based on a scale of 1 to 5, with 5 being extremely satisfied.

#### New questions in the 1996 survey

Application monitoring	3.63
Configuration management	3.63
Optimizing applications	3.46
Troubleshooting applications	3.62
Workload management	3.39



puter Associates International, Inc.'s UniCenter.

That doesn't necessarily mean companies in the latter category are satisfied with the level of integration and functionality these frameworks provide. Rather, like Dow Corning, they see the strategy as the best way to meet the urgent need to manage mission-critical applications that run across dispersed, often multivendor, client/server domains, or silos.

"Every large computing shop like ours is composed of silos," says an IT manager at a large financial firm who requested anonymity. "We have mainframe, mid-

range and network silos, and PC LAN silos," each managed by its own set of tools and often by local administrators. "We want to take the best management practices and lay them down as an enterprise model so that we can manage redundancy, backup, change and pinpoint problems across these silos."

Conversely, a company such as Pacific Gas & Electric Co. (PG&E), with extensive but largely homogeneous systems, can get

## Management tips

**Y**ou can take it upon yourself to improve your satisfaction level with applications and systems management by taking some or all of these steps:

**1. Deploy appropriate instrumentation:** Monitoring critical servers, clients and applications is essential. Analysis tools can help identify communities of interest, traffic flows and behavioral profiles. Look at Seagate Enterprise Management Software, Inc.'s Behavior Model, Tivoli Systems, Inc.'s Sentry, Compuware, Inc.'s Econet and Ecotools, and BMC Software, Inc.'s Patrol.

**2. Review your policies:** Do your management policies, processes and strategic priorities fit with your rapidly changing requirements and business goals? Conduct a review to assess the areas where you can contribute to the bottom line with resources on hand.

**3. Evaluate systems management frameworks:** A number of vendors have frameworks that include a set of tools—from integrated repositories to object models—designed to help you build a systems management environment that can scale from the workgroup to the enterprise. Check out Computer Associates International, Inc.'s Unicenter, Intel Corp.'s LANDesk, the Tivoli Management Environment and IBM's SystemView.

**4. Handle the administrative tasks:** Systems administration tasks prepare a system to participate in network activities. Remote operation, configuration, software version control and delivery, asset/inventory management and backup are examples of basic tasks you have to get a handle on before exploring more advanced capabilities.

**5. Introduce behavior management:** Besides administrative management, the other key is managing the behavior of your various systems and applications. This is an emerging area that exploits intelligent agents, embedded expertise and policy-based management. Some tools may be specialized—for databases, for example—while others are more general. Look for products in this area from vendors including BMC, Seagate, Novell and Oracle Corp.

—John McConnell

along fine managing them via home-grown software and system-specific tools. Unix and TCP/IP are used throughout the company, says Daniel Hassler, a Unix systems administrator for the California utility. "Most of our management is built into the operating system—like Sockets stuff for sharing information between systems and EtherFind for looking at packets," he says.

"We're not having the kinds of problems" that integrated management platforms such as the TME solve, Hassler explains. "When you're looking at bang for the buck, we'll get the budget for tools to analyze database performance before we get it for integrated systems management," he adds. "And we'll buy a server hardware upgrade needed to improve database performance before we buy a [centralized management platform] to watch the server."

Several respondents agree with Hassler, saying that management platforms were tough to cost-justify, particularly when the systems budget was already taken up with basic requirements such as CPU and disk upgrades.

John Hopkins University, for example, finds it cheaper to boost disk or hardware capacity than buy a tool to analyze performance and capacity needs on a more sophisticated level, says Robert Kambic, director of IS for the John Hopkins Population Center. The office is "working hard to develop a strategy for managing cross-platform applications, particularly as we get into things like [Sun's] Java," Kambic says. However, "we're funded mostly by government research grants, and there's not a lot of funding for [management] infrastructure."

Users also express impatience with the level of integration provided by most of today's platforms. PG&E's Hassler says he views today's systems management platforms primarily as "a nice, pretty GUI to dress up management utilities that I already have."

Baker & Taylor, on the other hand, expects to get real benefit from a GUI-based platform that screens users from the underlying differences in the systems they manage, according to Lester Thierwechter, IT project director for a book wholesaler. However, today's platforms fall down when it comes to "seamless integration on the data level" that would enable users to collect, correlate and analyze management data across different system domains.

Indeed, such integrated applications management is another area of user dissatisfaction, according to the survey. Likewise, tools to monitor application performance and track application status are among the features that respondents rated highest, in terms of their importance, in increasing satisfaction (see Figure 2).

"We basically have systems management, but applications management is a mess," DHL's Srikant says. This makes sense, given that applications management is a fledgling market, and even more fragmented across disparate vendors and products than is the systems management industry.

Products to meet applications management needs have only begun to emerge in the last year or so. Vendors such as Concord Data Systems and Coronet Systems, Inc. (now part of Compuware Corp.) offer tools for tracking the performance of popular applications and associated traffic levels across network backbones.

Furthermore, vendors such as CA, IBM/Tivoli, HP, Compuware and BMC Software, Inc. are gaining ground in their efforts to meet their customers' demands, through a combination of object-oriented architectures and intelligent agents. The agents work with various leading systems and applications, sending configuration, performance and resource usage data to vendor-specific management tools along with alerts when problems arise. The information is then stored in a common repository where various management tools can access it.

This is the blueprint adhered to in TME 3.0, which IBM plans to use as the basis for its systems management architecture, says Martin Neath, vice president of TME core products for Tivoli—now IBM's official systems management division. "A database or application in the enterprise exists as one object which all applications can interact with—whether you're monitoring its performance" or

**FIGURE 2: THE WISH LIST**

Top 5 systems and applications management features desired that would make it possible to:

Track application status: 4.5

Automate reporting: 4.46

Automate repetitive tasks: 4.45

Integrate with network management info: 4.35

Improve application performance: 4.35

Rating based on a scale of 1 to 5, with 5 being essential.

## SLOW BUT STEADY PROGRESS



The overall level of satisfaction with the state of network and systems management has grown only slightly in the past three surveys (on a scale of 1 to 5, with 5 being extremely satisfied).

## New crop of standards may bring new hope

**A**fter seeing a procession of vendor consortiums come and go in the past few years, users are cynical about whether they will ever see standards that allow them to match their favorite management tools and platforms with their unique mixture of systems and applications.

Still, there is some hope that the present crop of standards efforts will be different from the last. For one thing, most of them use one of the few successful systems management standards: the Desktop Management Task Force's (DMTF) Management Information Format (MIF).

Supported by a broad body of leading operating system, workstation and applications vendors, MIFs provide consistent ways to format asset and configuration information, then present it to management platforms and tools via the DMTF's Desktop Management Interface. Version 1.0 of the MIF specialities dealt with basic information such as an application's or operating system's version number.

Last fall, the DMTF released Version 2.0, which adds "installation-related information important to software," such as the target operating system, installation routines and parameters, says Winston Bumpus, a Novell, Inc. engineering director who chairs the DMTF software MIF working group.

Several vendor consortia are working to extend the MIF's management domain still further. Efforts include the following:

■ Last fall, IBM, Sun Microsystems, Inc., Apple Computer, Inc. and Ki Networks, Inc. announced they were working on Common Agent Technology, which takes MIF-formatted information and maps it to a Simple Network Management Protocol Management Information Base (MIB). The agent is now available for DOS, Windows, NT and IBM's AIX, with additional support in the works. IBM now supports the MIF-to-MIB mapping, and Ki is implementing the technology on HP's OpenView.

■ IBM/Tivoli is leading an effort to extend the MIF definitions to include information about an application's real-time activities, installation criteria, security and resource dependencies, such as what databases or other applications it interacts with. The work is based on Tivoli's Application Management Specification.

■ A parallel effort is aimed at proposing in September an IETF request for comment for an SNMP MIB that can tell whether an application is up or down, and how long it's been up. The second version, still in the planning stages, will include information on external resource dependencies and other real-time data not yet determined, a working group member says.

■ Former members of the now-defunct Management Information Consortium have been working on Cooperative Management Protocol, which standardizes how different management tools exchange and present information about events and topology changes via a management console. The group plans shortly to propose the protocol as an X/Open standard.

—Elisabeth Horwitt

**FIGURE 3: SURVEY TIDBITS**

The typical respondent manages an average of 11 servers and 225 desktops in a heterogeneous environment.

16% are using strategic management tools.

43% and 44% want distributed or centralized solutions, respectively.

22% are planning to use specific system frameworks, such as those from Tivoli and CA.



planning an automated software update, Neath says.

Users see the IBM/Tivoli merger as promising. "Tivoli's TME is a fully object-oriented, agent-oriented platform that brings to the table an awful lot that was missing from IBM's SystemView," the financial IT manager says.

And in the past few months, the major management platforms have been outfitted with the ability to correlate incoming alerts and make an educated guess as to which system, network device or application is the likely source of the problem. IBM will incorporate Tivoli's alert correlation tool into its future systems management platform, Neath says. Cabletron Systems, Inc.'s Spectrum and HP's OpenView are providing correlation via links to Seagate Enterprise Management Software's NerveCenter.

Unfortunately, all of the major platforms share a common drawback: They

are proprietary. Each vendor is pushing its own agent architecture — which must be implemented on leading databases, client and server systems — and collaborative software packages on a case-by-case basis. No matter how aggressively vendors implement their agents, users say they are unlikely to cover everything installed in, say, a large financial service company or investment house.

Given that, several respondents say that they are attempting to make their client/server systems and applications more homogeneous in order to lower the cost and technical complexity of managing them. Harris Semiconductor, for example, is in the middle of a yearlong project to migrate from a "multitude of different [systems] platforms and applications to a standard [Windows 95] client and one software suite for everyone," says Arthur Richard Anderson, a principal systems analyst at the company.

The move will "make it much easier to do centralized, automated administration," including security and configuration management, using a homegrown SNMP-based management platform, Anderson says. "This is a big, big concern because we are rolling out so many clients."

However, systems and application homogeneity is not an option for many large corporations, particularly those whose users have specialized application needs. Heterogeneity, indeed, is the norm for the NW survey respondents (see Figure 3).

The obvious solution to the problem is a standardized set of specifications by which application and system agents can present management data. Then platform vendors would not have to deploy agents on a case-by-case basis. Ultimately, users would gain the ability to "mix and

match the best [management tools] we can buy," DHL's Srikant says.

The problem, as several survey respondents point out, is getting vendors to agree on a common set of standards (see story, page 46). "Everyone wants to pull standards in their own direction," says Baker & Taylor's Thierwechter. Which way things go "is a matter of whose suite has the biggest marketshare this year."

Still, some users concede that the industry has made a fair amount of progress in the past year. Survey respondents rate overall improvement of systems management at 3.85 (up from 3.6 last year) and integration capabilities 3.55 (up from 3.1 last year).

"The platforms have matured a lot; they're starting to get [cross-domain] support across different servers," Harris' Anderson says. In fact, if Harris were not already committed to its homegrown Simple Network Management Protocol system, he says, it would be taking a hard look at those platforms.

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Check out Network World Fusion to find:  
**■ Results from the 1994 and 1995 Network World network management surveys**  
**■ An archive culled from the comp.dcom.net-management discussion group**  
**Select Careers then Network World management survey.**  
<http://www.nwfusion.com>

**Message queue**

*Continued from page 41*

that most of the applications are sent to data entry personnel, then destroyed with my addendum completely ignored.

Todd Pearce  
Plano, Texas

**Love-hate relationship**

I laughed when I read Mark Gibbs' column "Warning: Computers may prove dangerous to your health" (March 25, page 90). I had just been through a round of verbal assault with a computer the previous night. The computer was an excellent opponent. Instead of cursing me back, it waited patiently until I had expended all the energy I could gather. Then it acted as if nothing had happened.

On the same day, my supervisor had a fight with his computer and knocked it off the desk, cutting his arm in the process. It seems Windows 95 kept telling him there were conflicts with system hardware, even after he took all of the optional components out of the case. Apparently, the final blow coaxed the computer to behave because after he picked it up off the floor and reattached all the cables, Win 95 "forgot" about the earlier conflict and booted up as it should have.

My fiancee says that only nerds fight and cuss their computer. I have to agree a little. I'd say that those who really love computers are the most likely to abuse them physically (and verbally) because they feel betrayed when something goes wrong.

Shayne Brandon  
System administrator  
College of Forest Resources  
Mississippi State University

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# Exchange makes the grade



*Better late than never; Exchange Server is a powerful messaging system with potential.*

By Todd Coopoe

After years of hype, Microsoft Corp.'s Exchange Server finally shipped last week. Our tests of the product show it to be a solid contender with enough features to automate a range of business processes. While we found a number of niggling limitations, there was nothing Microsoft shouldn't be able to address in a relatively short time in a future maintenance release. This product is definitely worth a look if you are in the market for a messaging platform.

Designed to integrate seamlessly with the rest of the Microsoft BackOffice family of products, Exchange Server integrates electronic mail, electronic forms, scheduling and groupware functionality into a single, client/server-based package.

Exchange Server features centralized administration of multiple servers, built-in Internet connectivity and easy scalability.

We tested Exchange Server Release Candidate 2, a nearly complete version of the product that Microsoft shipped to early adopters, and found it easy to deploy and administer. While its forms and conferencing features are not as rich as those of Lotus Development Corp.'s Notes, its tight integration with Windows NT and the Exchange client shipped with Windows 95 make it an attractive upgrade for current Microsoft Mail users.

On the client side, Exchange Server interoperates with a 32-bit NT client, an updated Windows 95 offering, and editions for Windows and DOS users.

Windows 95 aficionados would do well to upgrade to the new client since it offers more features than the original Exchange software that ships with the operating system. Installing the new release gives you access to more than 30 new features, including AutoAssistants — intelligent agents that process and filter incoming information — digital signature support, and scheduled, unattended connections to send and retrieve mail from Exchange Server.

Our kit also came equipped with an alpha release of a Macintosh Exchange client, which Microsoft plans to deliver three to four months after the Server is released. But a Unix client, said to be in the works, was nowhere to be found.

For our testing, we installed Exchange Server on a 90-MHz Pentium running Windows NT 3.51 (with Service Pack 4, the most recent maintenance release) with 48M bytes of memory and more than 4G bytes of available disk space. Installing Exchange Server from CD-ROM took about 15 minutes using the Windows-based install program and installation wizard.

As an enterprisewide electronic post office, Exchange Server offers a number of appealing features that ease the process of transferring data between multiple clients. One of the most welcome is Exchange Server's integration with

Windows NT Server. Accounts and mailboxes for new users are created via NT Server's built-in User Manager for Domains program, which allows you to maintain a single network logo for all users.

Existing users in an NT Domain can have their mailboxes set up using Microsoft Exchange Administrator.

Rounding out the account model, Exchange Server also supports NT's use of global and local groups. User Manager makes it easy to build accounts and mailboxes for new users.

Once a user account and mailbox have been created, data sent by clients is stored in Exchange Server's 16G-byte private information store. To conserve disk space, a message sent to multiple recipients is stored only once on the server and then referenced by individual mailboxes. Also, disk space quotas and message age limits can be set on private mailboxes.



**Figure 1:** Exchange Server's Migration Wizard aids in migrating users from legacy E-mail systems. You can import user information, but not files and folders, for Microsoft Mail, Lotus cc:Mail, Digital All-in-1, PROFS and OfficeVision.

## NetResults

### Product

Microsoft Exchange Server

### Vendor

Microsoft Corp.  
One Microsoft Way  
Redmond, Wash. 98052-6399  
(206) 882-8080  
FAX: (206) 936-7329  
<http://www.microsoft.com/>

### Pros

- ▲ Seamless Internet support
- ▲ Powerful administrative tools
- ▲ Scalability
- ▲ Scheduling and forms capabilities

### Cons

- ▼ Runs only on Windows NT Server
- ▼ Limited client support
- ▼ Heavy resource requirements

### Price

\$529

missing a beat.

In addition to facilitating inter- and intra-post-office connections via connectors, Exchange Server uses Microsoft's Messaging Application Programming Interface (MAPI) to communicate with clients. Any MAPI-compliant software can take advantage of Exchange Server's mail facilities, including E-mail-savvy applications such as Microsoft Word and Excel.

Support for MAPI and a number of

other nifty features also extends to mobile users. Road warriors can connect to the Exchange Server via Microsoft's proprietary Remote Access Server or an IP-based protocol such as PPP or SLIP. Once remote users are connected, the Offline Folders facility allows them to perform bidirectional synchronization of data between a laptop and Exchange Server. The Remote Mail option also allows mobile users to selectively download incoming E-mail and send any outgoing mail that may have been queued up off-line.

During our tests, we encountered an interesting limitation with the client-side synchronization routine: You can't grab a hierarchy of nested folders — folders that contain other folders — at one time. Instead, you must create a local copy of each nested folder before attempting to perform a synchronization.

To accommodate large sites with disparate E-mail systems, Exchange Server provides a number of tools for converting E-mail and user account information from other servers. You can import users from Digital Equipment Corp.'s All-in-1, IBM's PROFS or OfficeVision, Microsoft Mail, and Lotus cc:Mail using a combination of source extractors, import/export commands and the migration wizard (see Figure I, page 48). We used the migration wizard to move some users from a Microsoft Mail server and found the process to be streamlined and straightforward. But we were a bit dismayed to find existing messages and attachments were not transferred during the migration process.

If migrating thousands of users isn't your cup of tea, Exchange Server comes equipped with a number of connectors, or gateways, which provide links between Exchange Server and foreign post offices. The site connector uses remote procedure calls to transfer mail between Exchange and Microsoft Mail servers for AppleTalk and PCLANs. To make integration as seamless as possible, each Exchange Server appears to the Microsoft Mail Server as just another Microsoft Mail post office.

An X.400 connector provides native support for X.400, allowing you to take advantage of an existing X.400 backbone and access public X.400 systems. The connector is fully compatible with the 1984 and 1988 X.400 message transfer agents standard, allowing you to send and receive messages and attachments that contain foreign language characters.

Outside of X.400 and Microsoft Mail, the Internet Mail connector provides native Simple Mail Transfer Protocol connectivity, including support for plain text, Multi-purpose Internet Mail Extensions (MIME), UUencode and UUdecode. Our tests using the Internet Mail connector left us impressed. It handled attachments and message routing without

## HOW WE DID IT

Our test network consisted of a Gateway 2000 P5/75 with 48M bytes of RAM. The system was running Windows NT Server 3.51 with Service Pack 4 installed and final Release Candidate 2 of the Microsoft Exchange Server. The server had the NETBIOS/NETBEUI and TCP/IP protocols installed.

Our NT client was a Gateway 486 DX2-50V with 32M bytes of memory running Windows NT Workstation 3.51. The Windows for Workgroups client was another Gateway 486 DX2-50V with 16M bytes of memory, and the Windows 95 client was a Gateway P5/75 with 16M bytes of RAM.

All the clients sent mail and communicated with the server over TCP/IP. They also filled out forms, created public folders and ran sample applications. The NT client also administered the Exchange Server remotely.

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E-mail security options are also available to Exchange Server clients. Microsoft integrated RSA-based public-/private-key technology into both Exchange Server and its client. Through the use of a digital signature, E-mail messages can be "signed" when sent and "verified" when received. A successful verification indicates that the sender did send the message.



Check out Network World Fusion to find:

- Tips on how to get the most out of Exchange
- Third-party tools for Exchange
- Select NetRef and Product Reviews, then click on Microsoft Exchange Server.

and that it wasn't altered during the delivery process. Entire messages can also be encrypted so only the intended recipient can decrypt and read the contents.

#### Public folders, private lives

Similar to the forums and special interest groups found on major on-line services such as CompuServe and America Online, Exchange Server allows you to set up public folders to hold information that can be shared among groups of users. This makes the public folders useful for establishing an in-house bulletin board or discussion forum, in a manner somewhat similar to a Notes database. In addition to text, the use of attachments allows you to store different types of documents in public areas. And like the private information store, Exchange Server's public information store can hold as much as 16G bytes of data.

Message threading is provided for all folders, making it easy to keep track of the flow of multiple conversations at one time. In terms of security, public folders allow owners and administrators to limit access to a particular individual or group via an access control list. In addition, administrators can set age and size limits on public folders and disallow them from appearing on a particular Exchange Server at all.

To balance server traffic, a public folder can be replicated automatically across multiple Exchange Servers. Administrators determine the synchronization schedule, allowing them to limit replication to after-hours to minimize traffic during peak usage periods. Alternatively, you can set replication to occur on a per-change basis.

Besides organizing information meant for public consumption, Exchange Server supports another groupware mainstay: integrated scheduling. The Exchange client includes a client/server-enabled version of Schedule+ 7.0, which allows you to share your calendar and contact list with

other users via the Exchange Server. A meeting wizard facilitates the scheduling of meetings and uses E-mail to verify meeting times. We found Exchange Server's group scheduling component worked well. It was easy to set up recurring meeting requests and respond to requests that caused schedule conflicts.

If you are still not content with Exchange Server's prepackaged software, you can develop customized groupware applications using Exchange Server's forms designer, distribution and management tools. Based on Visual Basic 4, the forms designer provides you with graphical user interface-based design capabilities complete with dialog boxes, radio buttons and scrolling fields. Forms can be used to create stand-alone applications or simply to provide different views of information stored in public folders.

Once completed, forms also can be made available for public use by installing them into a form library database. To facilitate development, Exchange Server also comes with number of form templates, sample applications and a forms designer wizard. In addition, MAPI forms support allows the Exchange Server to interoperate with any third-party, MAPI-compliant software package. The forms options are not as great as those of products designed specifically for such purposes, but that limitation is balanced by the tight integration with the messaging engine.

#### Out on the 'Net

In addition to its Internet Mail connector and the availability of Internet access, the Exchange Server sports additional information superhighway features. The optional Network News Transport Protocol Connector allows you to download sets of Usenet newsgroups into public folders and organize them by conversation thread. Users can read existing dialogue and post new messages using the Exchange client. The connector uses UUencode or MIME to encode/decode incoming and outgoing news attachments.

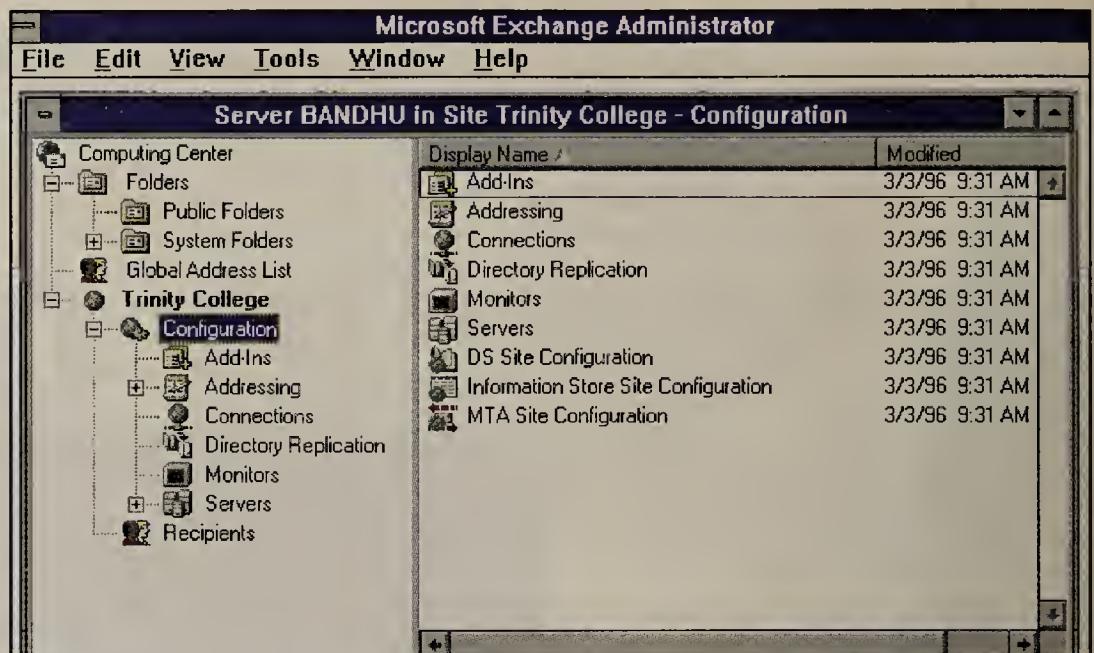
Integration with the World-Wide Web is minimal, but a forthcoming Web connector will allow further integration with Microsoft's Internet Information Server and Internet Explorer client. Microsoft also recently added embedded URL support to the Exchange client.

Clicking on a URL in a mail message fires up a local Web browser and connects to the site.

#### Administrative assistance

Exchange Server's graphical Administrator program allows you to manage all servers and their corresponding mailboxes, public folders and connectors from a single workstation (see Figure 2).

Using the resource tree introduced in Windows 95, the Administrator program depicts a hierarchy of sites, servers, users



**Figure 2:** Taking a page from the Windows 95 resource tree, Exchange Server's Administration program allows you to manage and configure multiple Exchange Servers from one location.

and configuration information. Administration is as easy as selecting a resource on the tree and using the mouse to navigate to the desired setup environment. For example, selecting a user's mailbox allows you to update information, set delivery options and verify E-mail addresses.

To keep your Exchange Server running on a 7X24 basis, the Administrator program provides access to a Server Monitor that tracks a list of servers, services and links to other systems.

If a service is found to be unavailable, the monitor can attempt to restart the service, notify an administrator via E-mail, and even shut down and restart the entire Exchange Server itself. In our tests, shutting down various services manually caused the Server Monitor to quickly restart them.

Exchange Server can also be monitored through NT Server's Performance Monitor, and the included Exchange Server load simulator can be used to flush out any potential resource bottlenecks. Warnings and error messages are also

## Platform choices

**M**icrosoft Corp.'s Exchange Server is designed to operate on any hardware that runs Windows NT Server 3.51 or higher, including Intel Corp.'s X86, Apple Computer, Inc.'s PowerPC, Digital Equipment Corp.'s Alpha, and other Reduced Instruction Set Computing-based platforms.

The amount of memory, disk space and processor type necessary for optimum performance depends on a number of factors. These include the number of users each server will host, users' electronic mail patterns and network topology.

Vertical scalability is possible due to NT Server's support for systems with multiple processors. As an example, Microsoft recommends that a low-end Exchange Server, capable of supporting 100 to 300 users, run on a Pentium processor with 32M bytes of RAM and 4G bytes of disk space.

— Todd Coopree

logged in NT Server's Event Viewer, which provides passable filtering and sorting capabilities.

Support for backing up Exchange Server data is also integrated into NT Server's backup utility. Like most production systems, Exchange Server can be backed up without having to log out individual users or shutting down the entire system.

#### Wrapping up

We were impressed with Exchange Server and feel strongly that it can fill a key role in most organizations. Its feature set, administrative capabilities and overall messaging prowess place it head and shoulders above host-based systems, which lack integration functionality, and many LAN-based systems, which can be difficult to manage and scale to meet growing needs.

Comparing Exchange Server to other enterprise-wide products such as Lotus Notes Release 4 and Novell, Inc.'s Groupwise is difficult because of the myriad features and functionality unique to each product.

It pays to prioritize what you need in a messaging or groupware product — E-mail, workflow routing, forms support, manageability, server hardware or network operating system support, client platforms — and then evaluate each product based on those needs.

Since Microsoft has been stung by complaints about its support policies in the past, it also remains to be seen whether the Redmondites will provide free technical support for their new flagship messaging product.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 41.



Coopee is assistant director of technical services at Trinity College in Hartford, Conn. He can be reached at [todd.coopree@trincoll.edu](mailto:todd.coopree@trincoll.edu).

# Management Strategies

Covering: Career Insights and Innovations  
in Managing Staff, Budgets and Technology

## Briefs

■ LAN management and network security software vendor McAfee has established an interactive Internet Support Forum on its World-Wide Web site.

The new forum lets users post questions or messages to McAfee support engineers or engage in threaded discussions with other users. Initial discussion topics include antivirus software, network management and storage management.

The company also has support services available on CompuServe, America Online and The Microsoft Network. You can check out the new forum at <http://www.mcafee.com/cgi-bin/net.Thread.pl>.

McAfee: (408) 988-3832.

■ Learning Tree International is offering a course to help users understand how to develop applications using Lotus Development Corp.'s Notes Release 4.

The instructor-led Hands-On Lotus Notes Application Development course walks users through the design of Notes documents, forms and views, as well as educates them on how to write LotusScript applications and debug them using Lotus-Script Debugger.

Other course topics include organizing Notes documents with graphical navigators; automating forms and views with macros, formulas and hot spots; integrating Notes applications with the World-Wide Web; and using Notes to improve business processes and enable users across the enterprise to share information.

Learning Tree is also developing a course to guide users through the process of designing and implementing a network of Notes servers. In addition, the course will prepare users to be administrators of Notes networks. The course is expected to be offered starting in July.

Learning Tree: (800) 843-8733.

## Training departments becoming outsourceable

By Kathy Scott

Internal technical training departments have lost favor in nearly one-third of companies surveyed for an International Data Corp. (IDC) report.

According to the survey, companies are increasingly showing faith in the ability of training firms to stay on top of ever-changing technologies and pass that knowledge on to technical staff and end users.

In fact, 32% of the companies surveyed relied solely on training firms for educating staff in 1995, compared to just 13% in 1994 (see graphic).

"By outsourcing training, companies make use of the skills, tools, practices, processes and infrastructures that leading training suppliers have developed," said Ellen Julian, senior

analyst in IDC's Information Technology (IT) Training and Education service.

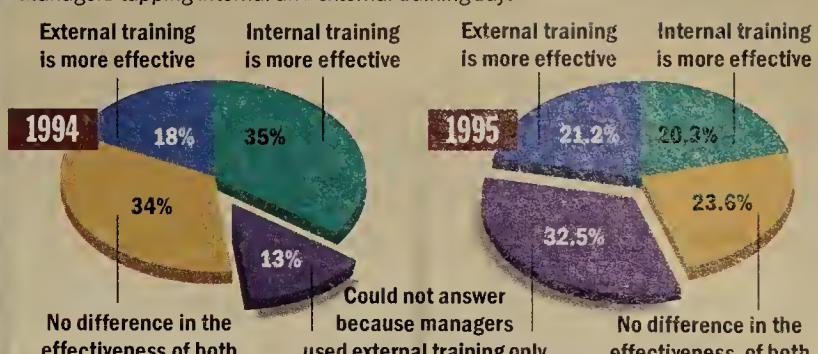
The report, "1995 User Needs and Requirements for IT Training and Education," is based on interviews with 100 IT managers and 100 business unit managers who have profit and loss responsibility.

The report also shows training budgets are becoming decentralized, moving away from IT managers into the laps of business unit managers. IT managers still purchase training services but, increasingly, only for their own departments. The trend is to get business unit managers more involved in training decisions to better match the particular needs of their workers.

Training expenses also are increasing. Technical education

### Managers rate internal vs. external training

Managers tapping internal and external training say:



Note: 1994 data is based on 157 responses. 1995 data is based on 186 responses.  
SOURCE: IDC, FRAMINGHAM, MASS.

is expected to eat up 4.9% of IT budgets in 1996, up from 3.8% in 1994. End-user training is expected to consume 4.5% of a business unit's 1996 budget, up from 3.9% in 1994.

IT managers reported that the amount of money spent to train technical staff on a per-person basis went up 11% from 1994 to 1995. The double-digit jump was driven by the need to retrain staff that had worked in legacy

mainframe environments in new technologies — such as client/server, object technologies and Microsoft Corp.'s Windows 95 — as companies moved to networked environments.

Money spent on a per-person basis for end-user training jumped 20% from 1994 to 1995, business unit managers said. Training on Windows 95 and network-based applications accounted for the rise. ■

## CONFERENCE PLANNING

Here's the lowdown on May conferences covering key networking issues.

**Conference:** Object World East  
**When:** May 5-9  
**Where:** Boston  
**Sponsor:** Object World Corp.  
**Contact:** (800) 241-4600

Backed by the Object Management Group, this conference addresses how object-oriented technology such as Microsoft Corp.'s OLE fits into distributed computing networks. A Distributed Applications Showcase on the exhibit hall floor will give vendors a chance to demonstrate interoperability among their object-based products.

The show's tutorials and conference sessions are organized around four themes: how object technology supports business processes, object technology implementation, distributed computing and object-oriented application development. A number of end users from the health care, telecommunications, financial services and manufacturing industries will present case studies about how they are employing object technology.

A full five-day registration package costs \$1,295. Four-day packages run \$1,095, while a three-day

package costs \$895 and a one-day tutorial is priced at \$450.

• • •  
**Conference:** ATM Year 96  
**When:** May 6-9  
**Where:** San Jose, Calif.  
**Sponsor:** Technology Transfer Institute, Business Communications Review and McQuillan Consulting, Inc.  
**Contact:** (800) 200-4884

Just about every aspect of Asynchronous Transfer Mode will be discussed at this conference. Tutorials and conference sessions are broken into six areas: strategic planning for ATM, uses for ATM, how to develop ATM products or services, how to offer ATM services, ATM internetworking and ATM research.

Carl Williams, Amoco Corp.'s vice president of information technology, will discuss ATM's role in the future of his company's network during a keynote address on May 7. Bran Ferren, Walt Disney Imagineering's executive vice president for creative technology, will divulge during a keynote address May 8 his opinion on what Internet service providers must do to ensure ATM deployment

will meet user needs.

Full registration for a tutorial and the conference is \$1,395. The conference-only fee is \$1,195, while a tutorial is priced at \$595.

• • •  
**Conference:** Systems & Network Administration '96  
**When:** May 20-23  
**Where:** New York  
**Sponsor:** Unix Review  
**Contact:** (214) 245-8874

Attending one of three tutorials on May 20 will help you understand how to use the PERL programming language to write systems administration tools, instruct you in the use of Unix's Sendmail mail transfer agent or learn how to configure an Internet firewall.

Conference sessions cover a variety of topics, including management of World-Wide Web and other types of Internet servers; interoperability within Unix, Novell, Inc. NetWare and Microsoft Corp. Windows NT environments; troubleshooting Fast Ethernet LANs; and ways to improve systems and network performance.

The fee for one tutorial and the conference is \$1,195, while the full conference registration runs \$995 and a tutorial or single day at the conference costs \$395.

More information about these conferences can be found on Network World Fusion. Select Careers then Conference Planning.

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- Infrastructure Mgr.
- Network Operations Eng. (C100)
- Operations Systems Architecture Eng.
- Simulation Modeling Eng.
- Applications Development Mgr.
- QA Test Mgrs./Engs.
- Managed Service Engs. (C200)
- Sr. Communications Eng.
- Object Modeling Eng.
- Systems Analyst/GUI Design
- Database Administrators

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Opportunities are available in **Dallas, TX** for individuals with: VAX, VMS, TCP/IP, LAN/WAN, C++, ASN.1, COMO, TMN/6000, CSET, AIX, SQL, ORACLE, OELPHI, Client Server, DMS100/250, EWSD, AXE-10, DEX600E, H.320, T.120, ISDN, etc. Positions include:

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- Network Equipment Eng.
- Network Synchronization Eng.
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- Program Mgr./Multi-Media-Wireless
- Network Synchronization Developer
- Direct Broadcast Satellite Transmission, Operations, and Program Mgr.
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- Network Restoration Eng.
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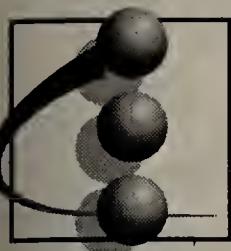
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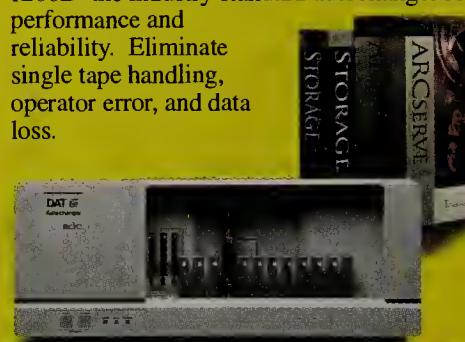
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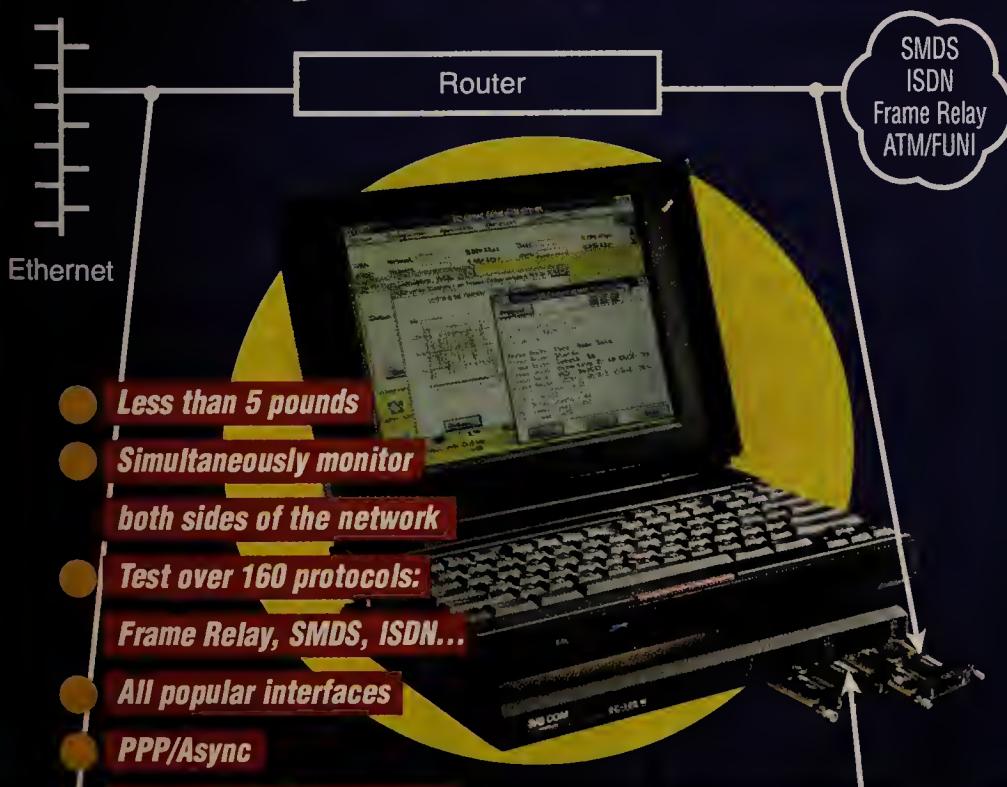
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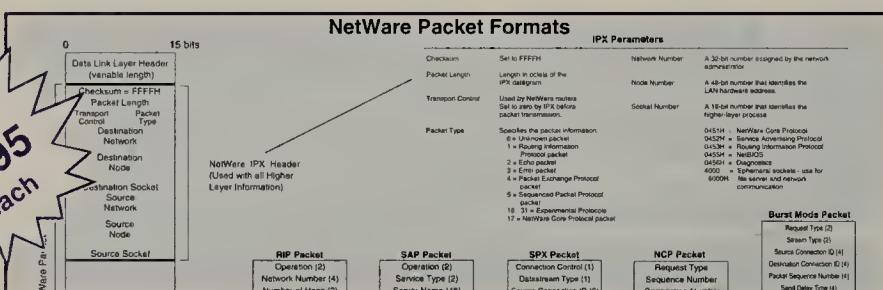
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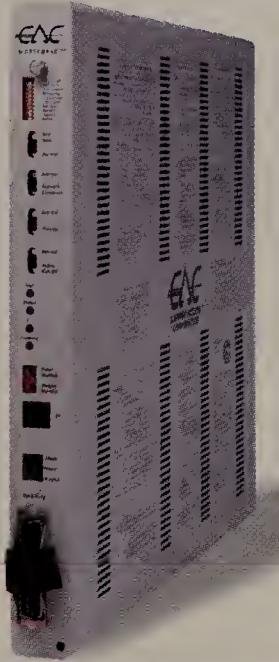
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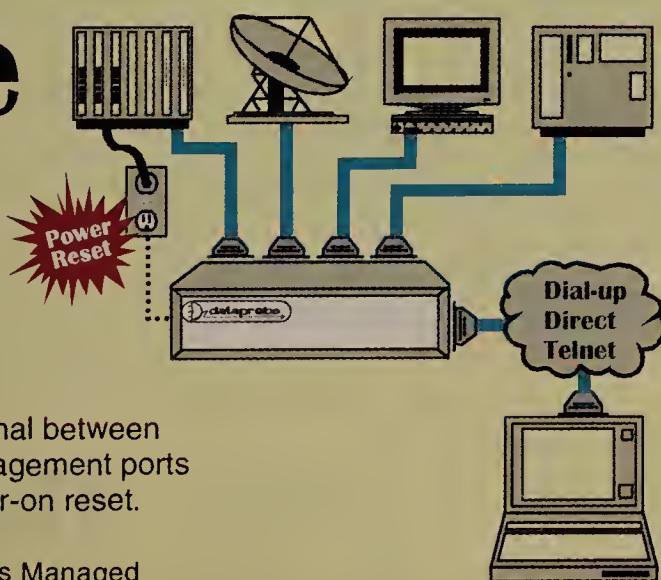
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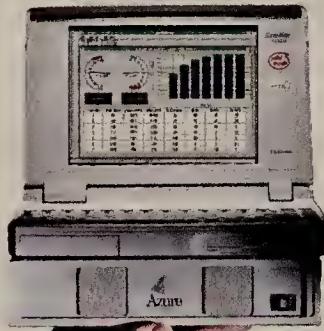
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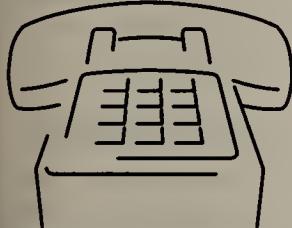
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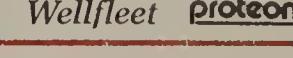
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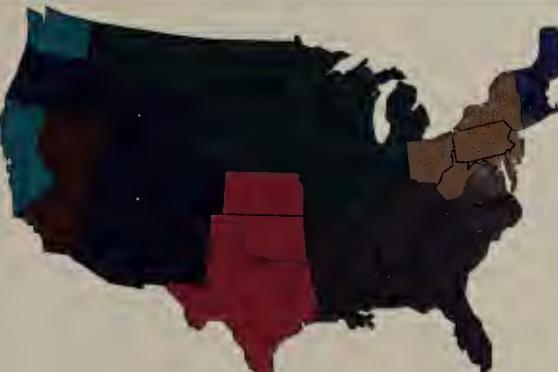
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## Cairo

*Continued from page 1*

for Exchange to have its own directory and Cairo to have an enhanced but compatible one of its own.

Now instead of Cairo being anchored by an object-oriented Object File System (OFS), the company will simply meld the Windows NT domain-name space with the X.500-like directory database in the Exchange groupware product.

NT and Exchange will maintain separate data stores, but NT 4.0, which is currently in beta testing, will be able to link the two transparently.

A single-user interface will update both stores to centralize administration tasks, according to Mike Nash, group product

manager for NT Server at Microsoft. The two directory data stores will finally be united in Cairo.

### LONG ROAD TO CAIRO

Microsoft is now rolling out Cairo features in stages.

**Near term** ▶ With the ability to link NT Directory Service data with information stored in Exchange directory. (summer)

- ▶ Network OLE, now dubbed Distributed COM.
- ▶ Gateway to resolve IP addresses between NT and the Internet.

**Long term** ▶ Windows NT Server Cairo, with a File System that can search (beta in '97) for properties of files; ability to create a logical view of the net.

The change in plan represents no change in strategy, Nash said. "We're still doing all the original features we talked about for the Cairo NT Server," he said. "The only thing different is OFS. All the things it was supposed to do will be in Cairo."

OFS was never a product fea-

ture, but rather a code name for a set of capabilities that will now be built into the Exchange directory, Nash said.

was to be based on an OLE file system that was an object store, directory and file system all in one."

### What it means for users

As described by Nash, the Cairo directory will maintain separate stores for files and the directory, but the file system will be extensible so users can add attributes, such as who created it, to a file identifier. The directory will be able to search for objects using those attributes, according to Nash.

Novell, Inc. officials at NetWorld+Interop crowded over the shift in strategy, saying Microsoft had left the network operating system directory space open to Novell's NetWare Directory Services.

The new plan may be a major

change in strategy, but show attendees watching NT Server demonstrations were diffident.

"It really doesn't affect us because we're just getting started on the migration," said Greg Larson, chief information officer for the City of Scottsdale in Arizona, which plans to move from a NetWare 3.1 network to NT servers.

A version of NT based on OFS would be so different from the current version that the upgrade path would be a "nightmare" for both users and developers, he said.

The new plan will ease that migration, and the fact that the directory and file system keep separate data stores will be masked by user interfaces and APIs that address both simultaneously, Microsoft said. ■

## PacTel

*Continued from page 1*

networking's biggest champions.

The \$16.7 billion deal between the two regional Bell operating companies will place PacTel operating units Pacific Bell and Nevada Bell under SBC, which, in effect, is buying out PacTel's shareholders.

A capital infusion would help Pacific Bell build new personal communications services (PCS)

systems under licenses it purchased last year in an auction in which it paid more per person than any other carrier (see story, this page).

In addition, top SBC and PacTel officials crowed that the merger ultimately will allow calls between Texas and California to originate and terminate on a single carrier's network if users select SBC as their long-distance carrier.

But as SBC Chairman Ed Whitacre acknowledged last

week, the combined company, for the time being, must still contain traffic within regional calling areas, or local access and transport areas.

Under the new telecommunications law, no RBOC or its successor may carry traffic originating in its region beyond LATAs until it meets a rigorous checklist of conditions.

These conditions include full interconnection with competitors and telephone number portability.

Analysts noted that the deal could actually retard SBC's long-distance entry by placing the nation's most populous state within its region. As a result, SBC no longer would be able to use the new law's looser out-of-region provisions to start carrying long-distance traffic to and from California.

### Energetic service promoter

But in Pacific Bell, SBC does gain a partner that has been consistently energetic in formulating and promoting new services, although its follow-through has not always been up to snuff.

Pacific Bell was one of the first RBOCs to offer Asynchronous Transfer Mode service two years ago, although it will only begin tariffing the service later this year.

Last year, Pacific Bell set itself a goal of having one million ISDN lines in service by 1998 and offered the best prices among the RBOCs for the service. However, that goal has been pushed back to the year 2000, and Pacific Bell has applied for an ISDN rate hike as a result of miscalculating the cost of provisioning the service. Users were not happy about that.

And starting with its ISDN ser-

vice, Pacific Bell has enlisted equipment vendors and value-added resellers to market the service through their channels and bundle in equipment. The company is extending that model to other services including frame relay and Internet access, promoting packages that lift the burden of selecting and installing equipment from the user.

SBC unit Southwestern Bell Corp., by contrast, has not followed the lead of other RBOCs in establishing new ISDN sales channels. While other RBOCs made the frequently unmet claim of "ISDN anywhere" last year, SBC remained quiet, offering city-by-city promotions of the service as it was prepared to support the service.

Southwestern Bell offers intraLATA frame relay service under public tariff in Texas, according to Beth Gage, a broadband analyst for TeleChoice, Inc., a consulting firm in Verona, N.J.

But she added that Southwestern Bell only offers ATM and Switched Multimegabit Data Service on an individual case basis, an arrangement in which service must be negotiated rather than ordered.

If you ask what switching platforms the carrier uses to provision those services, she said, "they'll say they haven't picked the platform."

"I don't think they put a lot of time and effort into fully developing their data services," Gage said. By contrast, "Pacific Bell has been one of the most aggressive players in frame relay and SMDS," she said.

"People are cautious and concerned about SBC's takeover," said Bob Larribeau, a director of the California ISDN Users Group and head of Larribeau Associates, a San Francisco consulting firm. "Pacific Bell is going to have to continue to be very aggressive in the deploy-

### Pacific Bell's data service direction

► **SNA on FasTrak** — Packaged frame relay service including customer premises equipment for SNA users; designed for specific vertical markets. Available in Q3.

► **Constant and variable bit rate ATM service** — Rates supported will range from 128K to 45M bit/sec. Available later this year.

► **Available and unspecified bit rate ATM service** — Available next year.

► **Frame User Network Interface and frame relay-to-ATM service interworking** — Available next year.

► **Internet service provider franchise starter kit** — Available later this year.

ment of new services, and we're hoping that California will be an area where SBC can pioneer and learn new things."

But some analysts said that just as the SBC take-over of Pacific Bell will not immediately result in new service options, it also should not diminish their existing local services.

"These people aren't heading to California out of a dustbowl," said Robert Rosenberg, president of Insight Research Corp., a Livingston, N.J.-based consultancy specializing in carrier services. "They're very sophisticated from a business standpoint, and it may only prove to be a boon to the people of California."

Senior Writer Tim Greene contributed to this article.

## Digital

*Continued from page 1*

negative implications for its own messaging products.

"We still have a strong commitment to our products and plan on taking them into the next generation," said Signe Maximous, Enterprise Groupware marketing manager at Digital. "Not all of our customers are going to be in the single desktop [Windows] environment."

Despite those assertions, Digital's own product groups seemed stung by the announcement. In fact, the firm's press release referred to VMS Mail, All-in-1 Mail and its TeamLinks groupware environment as "legacy messaging environments."

But just six months ago, Digital laid out a plan to sharpen its messaging line with hooks to a host of popular clients, and pledged that its MailWorks and other tools would support Microsoft Corp.'s Messaging Application Programming Interface, making them a good fit with Windows and Windows NT.

The move to the Windows NT-based Exchange could under-

mine the efforts to sell Digital's own technology. Maximous, however, said Digital's messaging products are aimed at users that have mixed environments, while "when you go with [Windows] NT-based messaging servers, you're looking at a more homogeneous Windows desktop landscape," she said.

Digital, though, is clearly putting its weight, both internally and externally, behind Microsoft and NT. In fact, the company has already moved more than 3,000 employees to Exchange, the company said.

"Our move to Exchange is part of our commitment to business process excellence," said Dennis Saloky, marketing program manager for Exchange at Digital. "We thought about standardizing on our own [messaging systems], as well. We have to look at the result we're going to achieve.... Companies need to do a self-examination and focus on their core competencies."

The announcement seemed

to point out some internal disagreements over messaging futures.

"Certainly there must have been some internal fighting over this. It had to be bloody. But it's actually a good move for them," said Rob Enderle, senior analyst at Giga Information Group in Santa Clara, Calif.

*"Our move to exchange is part of our business process excellence,"  
Digital's Dennis Saloky said.*

But one of the major points that wasn't played up in the announcement is the fact that Exchange will work with the firm's X.400 backbone using Digital's Mailbus 400 software and that the company will continue to exploit its own messaging technology, Maximous said.

Maximous also argued that the Exchange rollout is consistent with Digital's plans announced last fall to form a three-tier messaging strategy. That strategy identified Windows NT, OpenVMS and Unix—three key Digital Alpha operating systems—as the focus for the company's messaging plan. ■

## Cisco

*Continued from page 1*

Interop 96 show here last week and other sources briefed by the company.

The new Catalyst 5000 module, which was displayed at the show and is available now, features 12 10M/100M bit/sec ports. The module enables customers to use the Catalyst 5000 for tying together 2900-based workgroups or as a higher density Ethernet network switch.

The product rollouts come at a time when Fast Ethernet's momentum is strong and fast outdistancing Asynchronous Transfer Mode as the LAN backbone media of choice, according to market tracker Infonetics Research, Inc. in San Jose, Calif.

In a recent study of 130 large organizations, Infonetics found that 22% of their LAN backbone ports will be Fast Ethernet—also known as 100Base-T—by the end of next year. Only 3% of their LAN backbone ports will be ATM by the end of 1997.

### Catalyst 2900 switches

Included in the new 2900 line is a model featuring 12 autosensing 10M/100M bit/sec ports with two switched 100Base-TX uplinks. Priced at about \$15,000, this configuration is aimed at Bay's popular 28115 Fast Ethernet switch, which features 16 10M/100M bit/sec unshielded twisted-pair ports and two 100M bit/sec uplinks for \$18,950.

Bay has shipped some 220,000 to 250,000 10M/100M bit/sec ports since rolling out the 28115 in January 1995.

"The 28115 has been a success in the market due to the flexibility of the 10/100 ports," said Michael Howard, president of Infonetics. The Catalyst 2900 line "adds credibility to these transition systems," he said.

The other version of the Catalyst 2900 sports 12 100M bit/sec 100Base-FX fiber connections with two switched 100M bit/sec uplinks. Priced at about \$24,000, it is targeted at Bay's 28104, which features eight 100M bit/sec fiber ports for \$19,950.

The Catalyst 2900 line will feature embedded Remote Monitoring capabilities and will be available this summer, sources said. Cisco declined comment.

### Catalyst 5000 add-on

Shipping now is the new 12-port 10M/100M bit/sec module for the Catalyst 5000. It will let the Catalyst 5000 link 10M and 100M bit/sec Ethernet workgroups to FDDI and ATM backbones configured with other Catalyst 5000s or with a new 13-

slot Catalyst LAN backbone switch Cisco is expected to roll out later this year or early next.

The 10M/100M bit/sec module for the Catalyst 5000 costs about \$10,000. Bay's recently announced 16-port 58000 10M/100M bit/sec module for its System 5000 hub costs from \$12,000 to \$31,000.

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## Cabletron

*Continued from page 1*

ule, observers said.

"Right now, you practically need a book by your side when using a VT terminal because it's so difficult to remember all the

receive a graphical view inside the device.

By clicking on the module configuration button, customers will be able to bring up a window inside the chassis that shows which modules are installed in each slot and the status of each

mentation available on the Internet or a local Web server.

In addition, SmartView will feature hotlinks from switch module statistics on the Web to manuals that help explain the statistics.

"This is great for some of my not-so-techie techies," said James Wiedel, director of networking at the University of Southern California in Los Angeles. "This is an easy way of presenting information that does not require too much sophistication on the part of the user."

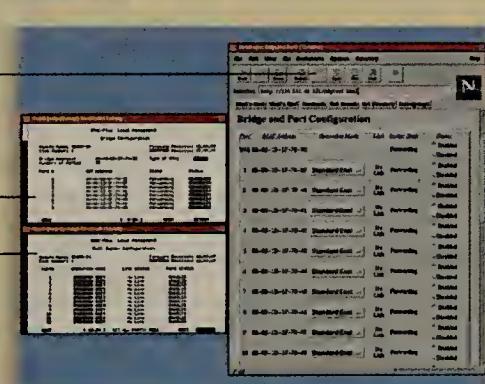
The SmartView management tool does not need to be used in conjunction with a full-blown management platform product but can work with Cabletron's Spectrum net management application to provide additional features. SmartView goes beyond the Web capabilities available for Spectrum, which are read-only and cannot drill as far into a switch module.

Down the road, Cabletron will expand SmartView by embedding Java applets in the browser to do real-time device monitoring. Also, the company plans to extend the Web-based tool to all of Cabletron's i960 processor-based hubs and switches.

The SmartView firmware upgrade will be free to existing customers and ship this summer. ©Cabletron: (603) 332-9400.

DOS commands," said Karl Shimada, president of consultancy Rising Star Research. "This new graphical interface is easy and intuitive. Other vendors' applications will be moving in this direction."

To use SmartView, customers will need to add the Web server hardware via a firmware upgrade to any Ethernet, FDDI or token-ring SmartSwitch device. Using a Web browser from Netscape Communications Corp. or another company, net administrators will attach to a particular SmartSwitch IP address to



port. Other indicators show per-port Remote Monitoring statistics as well as the status of power supplies and fans, which could not be monitored via telnet.

"SmartView is really a dashboard that shows how a Smart-Switch module is performing," said Trent Waterhouse, Cabletron's product marketing manager for switching. "We will also provide graphical indicators that show top port traffic, processor engine utilization and the amount of free buffer memory."

SmartView will also provide access to on-line technical docu-

## In Vegas with amazing VR, incredible sushi and a lot of vendors

**A**nother spring, another NetWorld+ Interop in Las Vegas — a place that always makes me shudder. It is rather like an adult Disneyland with games for the mathematically challenged. But I digress....

This was a great Interop, providing you survived the parties. *Network World's* 10th birthday party was at Dive!, a Steven Spielberg sandwich bar with a submarine theme. Definitely great fun.

Actually, speaking of entertainment, I must digress again. I met my old pal Winn Schwartau (who also has been known to pen a word or two for this august organ) at the Luxor hotel prior to going out for dinner. (We went to a little-known sushi bar that was so good, I am committed to keeping its location a secret.)

"Have you tried the virtual reality games here?" Winn asked before we left for dinner.

I am not a fan of computer games in general, but virtual reality games are different. So mere seconds later, we were up in the game area. After paying \$4, I was strapped into a three-axis F-104 simulator made by Sega Enterprises, Inc. As a three-axis simulator, it can simulate pitch (forward and back), yaw (left and right rotation) and roll (from side to side).

Now when I say "strapped in," I'm not kidding. They use an over-the-shoulder harness and a lap belt — and it is not for effect! Once they press the on button, you are off... in my case, I was immediately upside down. That was when I started laughing hysterically. It was one of the most fun games I have ever played.

I shot down eight fighters, which didn't seem too shabby, but then I crashed back on the carrier deck. I could probably sort that problem out with a couple of hundred bucks of game time.

Of course, I now want one of these machines, even though they are about the size of an 8-foot cube and probably cost a gazillion dollars.

(Actually, what I want is a network management system that is like that flight simulator. Just imagine virtually careening across your network backbone, riding the rapids of the routers and shooting down the packets of intruding hackers. "Ah-ha! Kevin Mitnick at 6 o'clock... rat-tat-tat-tat... got him! Go down in flames,

*Imagine virtually careening across your network backbone, riding the rapids of the routers and shooting down the packets of intruding hackers.*

you swine...")

Meanwhile, back at the show: My favorite section was the Interop DotCom area where a number of vendors showed their Internet/intranet wares. In this section, the booths were mainly 20 feet by 20 feet and manned by an average of only two people. It was very intimate — none of the razzle-dazzle of the main floor. There were no jugglers, no clowns and no cheesy wanna-be actors grinning their way through their lines.

You could also actually talk normally. In the main halls, it was all too common to find musicians drowning out the conversation on surrounding vendors' stands. When will the industry learn that this behavior is an incredible irritant and buys nothing? It is time show promoters impose noise-level controls.

There was actually one vendor that featured a loud and mediocre jazz trio that played background music to a product presenter. Unfortunately for him, the band played at roughly the same volume, so he might as well have saved his breath. I forgot to note the vendor, so if you spotted the same hilarious mess (or for that matter, any others), drop me a note.

Overall, an excellent show. Lots of great products, which I will get around to telling you about in due course. Let me know what you thought of the show and what products got you excited.

Oh, and thanks for all the mail after last week's column — it was not completely an April Fool's joke.

*Do you have or are you building an intranet? Spill the beans to Gibbs at mgibbs@gibbs.com, or call (800) 622-1108, Ext. 504.*



Mark Gibbs

## SBC takeover of PacTel bodes ill for data service users

**C**hildren in abusive families often wish they could run away and hide. While they appreciate the basics like food, clothing and shelter, the plight can be too much to bear.

People who use local telecommunications services — especially advanced data services — are a bit like abused children. They appreciate getting the basics, such as dial tone, reliable service and universal connectivity. But they are tired of the patronizing and bullying tactics of the monopolies. Their secret wish is to run to another provider.

Network managers in California and Nevada were probably hoping the Telecommunications Act of 1996 would lead to that — local-loop alternatives. Undoubtedly, they were surprised to learn last week that reform was instead leading to the \$16.7 billion merger of Pacific Telesis Group with SBC Communications, Inc.

Big money makes big news and usually leads to happy stockholders. Yet while investors might hail power mergers, I am



Dave Buerger

SBC, for example, has a poor record as a data service provider. It dragged its feet adopting National ISDN-1 in central office switches. It ranks near the bottom of Baby Bells in installed Basic Rate Interface lines — just 30,000 as of the end of last year, according to Datapro. And SBC has the nation's highest ISDN installation fee.

SBC fares a bit better in the frame relay department. Its share of the frame relay revenue collected by local carriers in the U.S. last year

was 12.6%. That trails PacTel's more aggressive 19%. Then again, who cares; total frame relay revenue last year for all Baby Bells was a mere \$50 million, according to Vertical Systems Group. That's a spit in the ocean compared to overall Baby Bell revenue of \$90 billion.

(Let's face it: None of the Baby Bells are really that good in data services. Voice dominates their attention, along with a gaggle of diversions, such as interactive media and cable TV.)

One gets another sense of SBC's grasp on today's network environment from its uninspiring home page at [www.sbc.com](http://www.sbc.com).

It greets us with news of the merger, a pitch for installing a second home phone line and an ad for managing your phone with a PC. Way cool, guys... not.

SBC also cares little about customer communications. The home page omits any feedback mechanism and contact names. PR people are also notoriously difficult to locate on deadline.

I'm sure SBC is not quite the ogre I portray, but network managers serviced by PacTel should be concerned, as should network managers everywhere.

Let's not kid ourselves: Mergers between Baby Bells do not promote competition nor do they promote growth, as SBC would like us to believe. Baby Bell mergers eliminate potential competitors and lock in monopoly-style service and attitudes. There will be no real local competition for at least two years.

Users have had enough abuse from local telephone monopolies. It's time the Bells stop seeking easy financial fixes and start making the local loop fulfill its modern, data-oriented promise.

*Baby Bell mergers eliminate potential competitors and lock in monopoly-style service and attitudes.*

not convinced that this one is in customers' best interest.

In PacTel's case, the spin-off of its profitable cellular unit (now called AirTouch Communications), coupled with poor financial results, forced the \$9 billion Baby Bell to seek a partner. According to *The Wall Street Journal*, PacTel's pitch was rejected by GTE Corp., NYNEX Corp. and BellSouth Corp. before SBC said yes. PacTel must be in terrible shape.

PacTel will cease to exist after the deal's intended consummation later this year. SBC will inherit PacTel's customer base and steer the 30.1 million phone line show from there on out.

What does this mean for network managers in California and Nevada? They can glimpse the future by eyeing SBC's service track record, which is not particularly stellar.

*Buerger is a networking industry consultant and writer in Atlanta. He can be reached at dave@buerger.com.*

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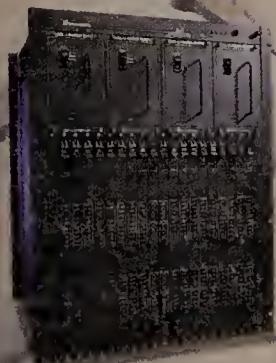




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